Al-Ahliyya Amman University

Emissions Report

Executive Summary

Green**h**ouse **G**ases **P**rotocol (**GHG-P**)

2025-2026

Prepared by:

Sustainability and International Ranking Center

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0.0 REPORT OVERVIEW

Al-Ahliyya Amman University has aligned its approach to quantifying carbon emissions with global standards by adopting the Greenhouse Gas (GHG) Protocol, widely recognized as the world's most commonly used standard for greenhouse gas accounting. This commitment reflects the University's dedication to ensuring consistency and reliability in its environmental reporting processes. In addition to applying the GHG Protocol, the University engages with several bodies to validate and enhance its reporting practices, including the Accreditation and Quality Assurance Commission for Higher Education Institutions (AQACHEI), the Global Reporting Initiative (GRI), the United Nations Department of Economic and Social Affairs (UN DESA), and Lloyd's Register Quality Assurance (LRQA) in Jordan.

This report provides a detailed summary of:

- **Scope 1 Emissions:** Direct emissions from on-campus operations, including the vehicle fleet and stationary combustion sources, along with the improvements implemented in these areas.
- **Scope 2 Emissions:** Indirect emissions from electricity consumption have been substantially reduced as a result of the University's full transition to renewable energy, with 100% renewable energy now used to cover the campus electricity demand, based on the energy data validated and adopted in this report.
- **Scope 3 Emissions:** A focus on transportation- and commuting-related activities.

At Al-Ahliyya Amman University, one of our key initiatives has been the establishment of the Sustainability Development Office. This office is dedicated to ensuring that sustainability is integrated not only within our academic framework, but also across administrative and student activities. A critical element of this integration is the establishment of a student sustainability club, which actively engages students in sustainable practices and initiatives across the University. Furthermore, the University is in the final stages of developing a new PhD program in Sustainability Management and Technology. This pioneering program is a collaborative interdisciplinary effort involving four colleges: Business, Engineering, Information Technology, and Architecture. It is designed to prepare future leaders by integrating sustainability principles with technological advancement, fostering innovative and impactful solutions across various industries.

By documenting our methodologies, data sources, and strategic improvements across all emission scopes, we aim to maintain a clear and accountable pathway toward our sustainability objectives, reinforcing our commitment to achieving a net-zero target by 2028 or earlier.

Al-Ahliyya Amman University's net-zero target of 2028 is significantly ahead of global carbon reduction commitments, including the 2050 benchmark referenced in international climate agreements.

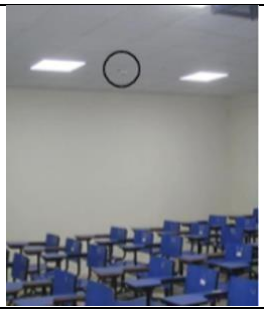
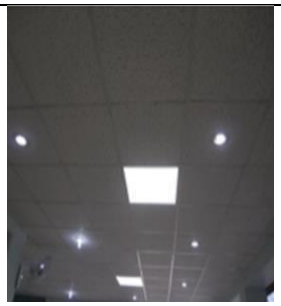
Table of Contents

1.0 INTRODUCTION

Al-Ahliyya Amman University is proud to present its Annual Carbon Emissions Report for 2025. As a forward-thinking educational institution, we are deeply committed to sustainability and environmental stewardship. This report reflects our ongoing dedication to tracking, measuring, and reducing our carbon footprint, with a particular focus on our progress toward achieving net-zero (Net Zero).

At Al-Ahliyya Amman University, we have established the Sustainability and International Ranking Center (SIRC), which is dedicated to ensuring that our strategic goals are aligned with achieving our sustainability targets by 2028 or earlier. The Center focuses not only on strengthening sustainability integration among academic staff and enhancing the visibility of our research regionally and internationally, but also on ensuring that administrative activities and student experiences are embedded with sustainable practices. This commitment is demonstrated through the organization of numerous workshops and training courses aimed at expanding sustainability awareness within the university environment and actively contributing to action projects across Jordan.

Our curriculum at Al-Ahliyya Amman University integrates sustainability across all levels, from undergraduate to postgraduate studies, covering fields such as Building Information Modeling (BIM), Project Management, Engineering, and Architecture. We emphasize the environmental, cost, social, and operational dimensions of sustainability. In addition, the University is in the final stages of preparing a PhD program in Sustainability Management and Technology, bringing together disciplines such as Business, Engineering, Information Technology, and Architecture, to develop future leaders who can integrate sustainability with technological innovation. Our goal is to equip students to drive positive environmental and social change.

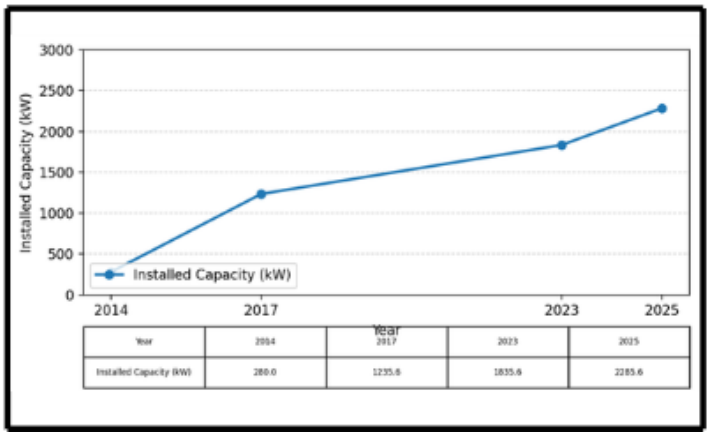
			
LED outdoor lighting units	Occupancy detectors inside the lecture room	LED indoor lighting units	A++ Rated efficient air conditioning units with inverter technology
			
Business School	Faculty of Pharmacy	Faculty of Nursing	Faculty of Art and Sciences

1.1 Achieving Full Reliance on Renewable Energy and Continued Expansion of Installed Capacity

Al-Ahliyya Amman University has achieved tangible progress in its transition to renewable energy through a carefully planned, phased approach to expanding its on-campus solar power system. This transition began with Phase 1 in 2014, which introduced an installed capacity of 280 kW and was successfully connected to the grid, establishing the foundation for subsequent expansions. In 2017, Phase 2 was implemented by adding 955.6 kW, significantly increasing the University's renewable energy generation. Phase 3, with a capacity of 600 kW, has also been completed following the fulfillment of all required approvals and technical requirements. The University is currently working on Phase 4, which will add an additional 450 kW of capacity, as part of its ongoing efforts to strengthen reliance on clean energy and enhance system readiness to accommodate future demand growth and improve supply reliability.

Solar energy represents the University's primary source of renewable electricity. Through the extensive deployment of on-campus photovoltaic (PV) systems, the University generates approximately 2,587,379 kWh per year (based on the actual operational data adopted in this report). Through its integrated renewable energy systems, Al-Ahliyya Amman University has become a net energy producer, generating more electricity annually than it consumes, with a net balance of -449,620 kWh, confirming that total annual generation exceeds consumption by this amount. This progress contributes directly and positively to reducing total Scope 2 CO_2 emissions and strengthens the University's pathway toward achieving its strategic sustainability goals.
These annual generation figures reflect the actual operational output of the systems in service at the time of measurement, while the contribution of Phase 4 will be reflected in the total generation once it becomes fully operational.

Year	*Installed Capacity (kW)*	*Description*
2014	280	**Phase 1:** Initial setup completion
2017	1235.6	**Phase 2:** Major expansion completion
2023	1835.6	**Phase 3:** Further expansion completion
2025	2285.6	**Phase 4:** Additional expansion in progress / planned completion (+450 kW, cumulative)



The accompanying chart will visually illustrate the phased growth in the installed renewable energy capacity at Al-Ahliyya Amman University from 2014 through the current expansion stages, highlighting the University's commitment to a sustainable future and enhanced energy independence.

1.2 Applying the ISO Plan–Do–Check–Act Cycle: Advancing Toward Our Net-Zero Target by 2028

- Plan: Building on Al-Ahliyya Amman University's goal of achieving net-zero (Net Zero) by 2028 or earlier, a strategic action plan was developed focusing on maximizing energy efficiency, expanding reliance on renewable energy sources, and strengthening the sustainability of campus operations. To ensure consistency and reliability in environmental measurement and disclosure, the University adopts the Greenhouse Gas (GHG) Protocol as its primary framework for carbon accounting, while also drawing on relevant best practices and standards.
- Do: Practical implementation has included delivering tangible initiatives to enhance clean energy adoption and improve operational efficiency such as expanding solar energy infrastructure, improving building efficiency, and advancing sustainable operational practices across campus. Educational and awareness initiatives have also been launched to engage the University community in adopting green behaviors and practices. In this context, the University established the Sustainability and International Ranking Center (SIRC) to align its strategic objectives with sustainability targets for 2028 or earlier by strengthening sustainable practices among academic staff, enhancing the visibility of the University's research regionally and internationally, and embedding sustainability into administrative functions and the student experience. This commitment is demonstrated through specialized workshops and training programs, active participation in sustainability projects across Jordan, and support for student-led sustainability clubs that promote awareness and meaningful engagement on campus.
- Check: The effectiveness of these initiatives has been monitored through periodic evaluations and accurate data analysis, including systematic tracking of energy consumption and validation of emissions reduction trends against the University's historical data, supporting informed decision-making and continuous improvement.
- Act: Based on monitoring and analysis outcomes, priorities have been updated and policies and procedures refined to optimize resource use, strengthen waste management programs, and increase community engagement across the University, maximizing the positive impact of sustainability initiatives.

  This structured application of the ISO Plan–Do–Check–Act cycle ensures that Al-Ahliyya Amman University continues to progress confidently toward achieving its net-zero target by 2028, while strengthening its position as a leader in environmental responsibility within the higher education sector. This report documents our progress, celebrates our achievements, and outlines the path forward as we continue to innovate and enhance our sustainability efforts.

2.0 METHODOLOGY

At Al-Ahliyya Amman University, our approach to quantifying carbon emissions is grounded in adherence to globally recognized standards and methodologies, ensuring robustness and consistency in our environmental reporting. We apply the principles set forth by the Greenhouse Gas (GHG) Protocol, the world's most widely used greenhouse gas accounting standard. Our efforts are also recognized and validated by several reputable institutions. The Accreditation and Quality Assurance Commission for Higher Education Institutions (AQACHEI) endorses our methods, reflecting our commitment to high standards of environmental responsibility. In addition, our alignment with the Global Reporting Initiative (GRI) helps ensure that our emissions reporting meets international criteria and is consistent with broader sustainability reporting practices, including those promoted by the United Nations Department of Economic and Social Affairs (UN DESA). We are also certified by Lloyd's Register Quality Assurance (LRQA) – Jordan, further reinforcing the credibility of our environmental initiatives.

- **Scope 1 Emissions:** Our assessment of Scope 1 emissions includes all direct emissions from sources that are owned or controlled by the University. This includes emissions from the campus fleet, any fossil fuels used for heating or other combustion processes within our facilities, and any other direct emissions arising from our operations.
- **Scope 2 Emissions:** Scope 2 emissions in this report capture all indirect emissions from the generation of electricity consumed by the University. Through extensive reliance on solar energy via on-campus photovoltaic (PV) systems, the University generates approximately 2,587,379 kWh per year, based on the actual operational data adopted in this report. Al-Ahliyya Amman University has also become a net energy producer, as total annual generation exceeds consumption, with a net balance of -449,620 kWh, confirming that annual electricity generation surpasses consumption by this amount. These results contribute directly to a significant reduction in Scope 2 emissions, while the impact of Phase 4 (an additional 450 kW of capacity) will be reflected in total generation and emissions once it becomes fully operational.
- **Scope 3 Emissions:** For Scope 3, our assessment focuses specifically on transportation-related activities, including emissions from business travel, commuting practices of students and staff, and the operation of vehicles not owned by the University but associated with its functions. This focused approach enables us to target one of the more variable components of our carbon footprint and to identify strategic areas where significant reductions can be achieved.

In calculating these emissions, we consider the carbon intensity of different energy sources used across our operations. This includes analyzing the types of fuels consumed, the efficiency of our vehicles and heating systems, and the electricity supply mix, even where electricity is sourced entirely from renewable energy. By applying these methodologies, Al-Ahliyya Amman University ensures that its emissions reporting is transparent, verifiable, and aligned with international best practices, supporting our ongoing efforts to monitor, manage, and minimize our carbon footprint as we advance toward our net-zero target.

3.0 DATA SOURCES

The data utilized in this Carbon Emissions Report for Al-Ahliyya Amman University is sourced comprehensively from multiple departments and facilities across our campus to ensure accuracy and integrity in our reporting. Each data source is vetted to ensure that it aligns with our methodology and the standards set by the Greenhouse Gases Protocol. This comprehensive data collection approach allows us to accurately track and analyzes our carbon emissions across all relevant scopes, providing a solid foundation for our ongoing sustainability efforts and emissions reduction strategies. The Sustainability Office at our university not only oversees the application of the data but also coordinates with several external bodies, including the Higher Education Accreditation Commission, international classification organizations, relevant official entities in Jordan and abroad, and the organization responsible for granting the university's quality certificate. Additionally, we work closely with Lloyd's Register Quality Assurance (LRQA) in Jordan. LRQA is a leading global assurance partner recognized for its commitment to helping ensure quality and compliance across various sectors through its ISO certifications. This collaboration underscores our dedication to maintaining high standards in sustainability and academic excellence.

3.1 Benchmarks

- A study by the American College and University Presidents' Climate Commitment (ACUPCC) found that member institutions emit an average of 52,434 metric tons of carbon dioxide equivalent (MTCO2E) per year. (**52K/Year**).
- Another study suggests an average emission intensity of 19.39 MTCO2E per 1,000 gross square feet (GSF) (**19/93M^2**).and 7.67 MTCO2E per full-time equivalent (FTE) student (**7.7/FTE Student**).
- Al-Shatnawi, Z., Alnusairat, S. and Kakani, A., 2020. Towards zero solid waste in Jordanian universities: The case of Al-Ahliyya Amman University. Environmental Research, Engineering and Management, 76(4), pp.46-59.

These figures are compared with data from the *Hashemite University's Carbon Emissions report for 2023-2025*, further grounding our metrics in local context and comparisons.

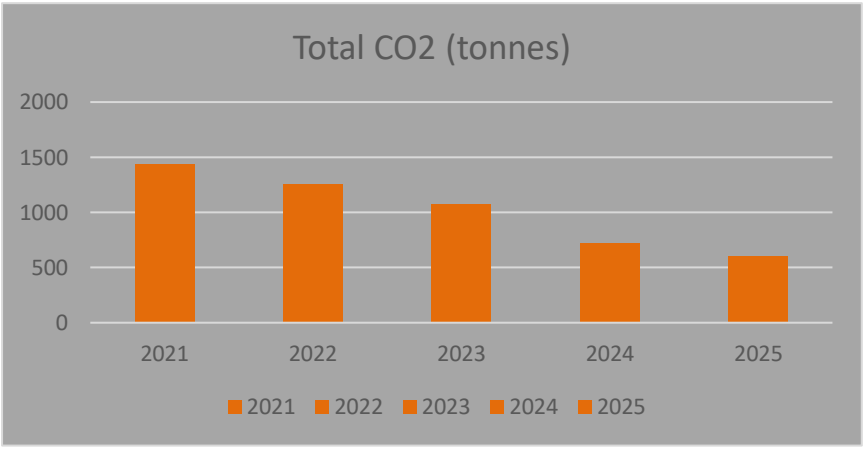
4.0 Total CO_2 (tonnes) Summary

Total CO_2 emissions decreased from 1,434.3 tonnes in 2021 to 722.8 tonnes in 2024, representing a total reduction of 711.5 tonnes or 49.6%. During 2025, the University continued to implement emissions-reduction actions. Based on the approved energy records, the University achieved zero purchased electricity from the grid, resulting in near-zero Scope 2 emissions under the reporting methodology. 2026 marks the start of a new data-collection cycle, and its results will be reported once measurement, verification, and internal approval are completed.

SN	Scope	2021	2022	2023	2024	2025
1.	Scope 1	27.1	25.2	22.3	20.2	18.5
2.	Scope 2	241.3	193.1	144.8	40.6	0.0*
3.	Scope 3- *Optional- Transportation*	1,165.9	1,036.4	906.8	662	580.0
	Total CO2 (tonnes)	**1434.3**	**1254.7**	**1073.9**	**722.8**	**598.5**

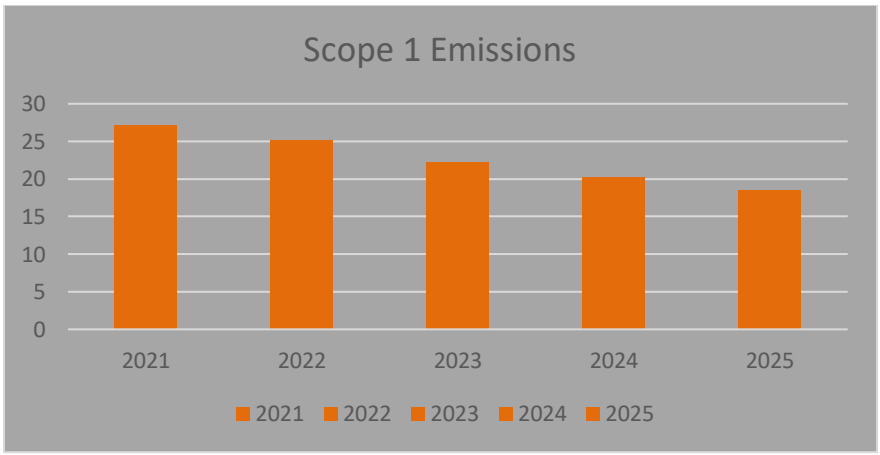
* **2025 Scope 2 = 0.0** based on **zero purchased electricity from the grid in 2025**, according to the approved energy records.

Total CO2 *reduction* (tonnes) 2021/2025 – **835.8 tonnes (-58.3%)**



4.1 Scope 1 Emissions

SN	Main Activity Type	2021	2022	2023	2024	2025
1.	Stationary combustion	13.6	12.3	11.1	9.8	9.1
2.	Mobile combustion	11.5	11.1	9.7	8.5	8.3
3.	Fugitive emissions from air-conditioning	2.0	1.8	1.4	1.2	1.1
	Scope 1* – Total CO2 (tonnes)	**27.1**	**25.2**	**22.2**	**20.2**	**18.5**



Improvement

1. **Installation of Energy-Efficient On-Site Equipment**
   Action Taken: The university has replaced older boilers and on-campus heating systems with high-efficiency models that use less energy and emit fewer pollutants. This update directly lowers the emissions from stationary combustion sources, aligning with the university's goals to minimize its carbon footprint.

2. **Implementation of a Refrigerant Management Program**
   Action Taken: Recognizing the impact of fugitive emissions from refrigerants, Al-Ahliyya Amman University has established a strict refrigerant management program. This program includes regular inspections, maintenance, and upgrades to HVAC systems to prevent leaks and ensure efficient operation. Such measures are crucial for minimizing emissions of potent greenhouse gases associated with air conditioning and refrigeration systems.

3. **Fleet Electrification Initiative**
   Action Taken: Al-Ahliyya Amman University has embarked on a comprehensive fleet electrification initiative, replacing all gasoline and diesel vehicles with electric vehicles (EVs). This transition includes not only light-duty passenger cars but also service and maintenance vehicles used across the campus. As part of this initiative, the university has installed multiple EV charging stations throughout the campus to support the new fleet, ensuring accessibility and convenience for charging.

   These targeted actions demonstrate Al-Ahliyya Amman University's commitment to minimizing Scope 1 emissions from mobile combustion sources. By adopting modern technologies, enforcing environmentally friendly policies, and ensuring vehicle maintenance is kept to high standards, the university actively contributes to sustainable practices and moves closer to achieving its net-zero emissions goal.

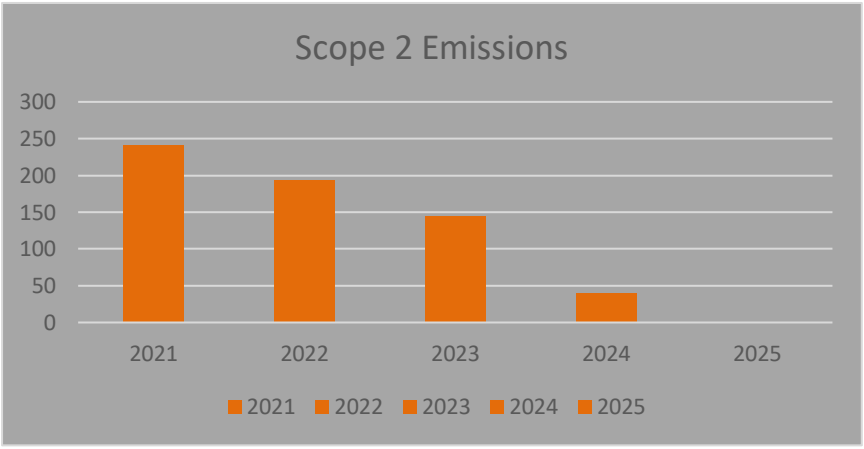
4.2 Scope 2 Emissions

SN	Main Activity Type	**2021**	**2022**	**2023**	**2024**	**2025**
1.	Purchased Electricity	217.2	173.8	130.3	35.6	0
2.	Heat	24.1	19.3	14.5	5.0	0
	Scope 2* – Total CO2 (tonnes)	**241.3**	**193.1**	**144.8**	**40.6**	**0**

The reduction in Scope 2 emissions over the period 2021–2025 represents a clear achievement and reflects the effectiveness of the University's actions to improve energy efficiency and expand reliance on lower-carbon energy sources. The table data show a major decline in emissions from purchased electricity, falling from 217.2 tonnes of CO_2 in 2021 to 35.6 tonnes of CO_2 in 2024 a reduction of 181.6 tonnes, equivalent to approximately 83.6% over four years. In 2025, based on the approved data, emissions from purchased electricity reached 0.0 tonnes of CO_2, indicating the elimination of reliance on purchased electricity within the reporting boundary adopted in this report.

The data also show a noticeable decrease in emissions from purchased heat, from 24.1 tonnes of CO_2 in 2021 to 5.0 tonnes of CO_2 in 2024, a reduction of 19.1 tonnes (approximately 79.3%). In 2025, emissions from purchased heat decreased further to 0.0 tonnes of CO_2 according to the approved data, supporting the University's overall approach to improving energy efficiency and reducing reliance on higher carbon-intensity sources.

As a result, total **Scope 2** emissions decreased from 241.3 tonnes of CO_2 in 2021 to 40.6 tonnes of CO_2 in 2024, and then to 0.0 tonnes of CO_2 in 2025. This represents a total reduction of 241.3 tonnes (100% compared to 2021), demonstrating a fundamental improvement in reducing energy-related emissions across the University's operations, in line with the reporting methodology and defined boundaries of this report.



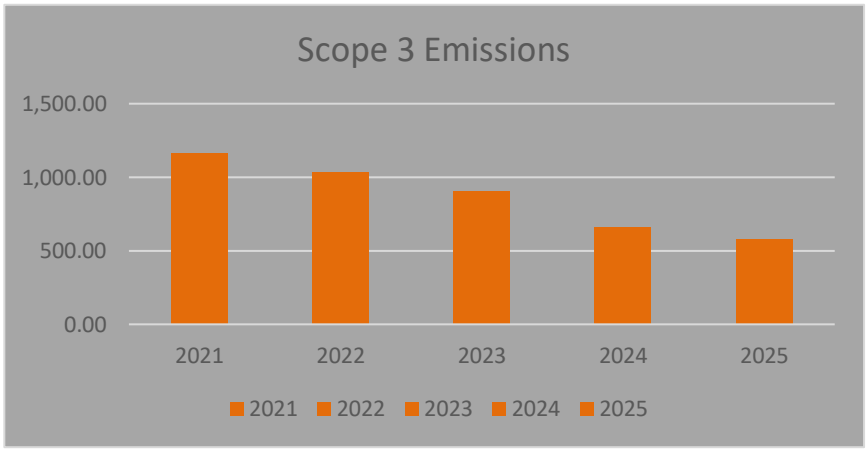
The significant reduction in Scope 2 emissions at Al-Ahliyya Amman University reflects the University's successful implementation of renewable energy technologies and its commitment to a sustainable future. This journey not only highlights the University's role as a responsible environmental steward, but also provides a benchmark that academic institutions globally can learn from. With zero purchased electricity from the grid achieved in 2025, based on the approved data within the reporting boundary of this report, the University is now focused on sustaining and strengthening this achievement through continued operational efficiency improvements and enhanced reliability of its renewable energy systems. Continued diligence in this direction will further reinforce the University's reputation as a leader in sustainability and environmental responsibility.

Improvement

1. **Maximize On-Site Renewable Energy Generation**
   Action Taken: Al-Ahliyya Amman University has expanded on-campus solar PV installations to cover additional buildings and facilities, increasing renewable electricity generation and strengthening energy independence across campus. Where applicable, the University continues to enhance system reliability and operational performance to maximize the utilization of generated solar power.
2. **Improve Energy Efficiency**
   Action Taken: The University has deployed a systematic energy management approach to monitor and optimize energy use across campus. Key initiatives include upgrading to LED lighting, installing high-efficiency HVAC systems, and replacing outdated appliances with models that meet advanced energy-efficiency standards. These measures have reduced total energy consumption and supported the University's broader emissions reduction efforts.
3. **Sustain Zero Purchased Electricity and Strengthen Renewable Energy Reliability**
   Action Taken: Based on the approved energy records, the University achieved zero purchased electricity from the grid in 2025 within the reporting boundary. The University is maintaining this achievement through continuous improvement actions, including optimizing load management, strengthening operational controls, and enhancing the reliability of its renewable energy systems. These actions support the University's pathway toward its net-zero target by 2028.

4.3 Scope 3 Emissions

SN	Main Activity Type	2021	2022	2023	2024	2025
1.	Transportation	1,165.9	1,036.4	906.8	662	580.0
	Scope 3* – Total CO2 (tonnes)	**1,165.9**	**1,036.4**	**906.8**	**662**	**580.0**



Transportation-related emissions show a consistent decline from 1,165.9 tonnes of CO_2 in 2021 to 662.0 tonnes in 2024, representing a reduction of approximately 43.2% over four years. This sustained downward trend reflects the effectiveness of the University's ongoing efforts to promote greener mobility practices and reduce transportation-related emissions. In 2025, transportation emissions are estimated at 580.0 tonnes of CO_2, indicating continued progress compared to 2024 (based on the assumptions adopted in this report).

To further strengthen this pathway, the University is conducting studies to support the integration of lower-emission vehicles into its transportation activities, including evaluating options such as electric and hybrid vehicles where feasible. In addition, the University has pursued sustainability-aligned arrangements with travel service providers to encourage environmentally responsible options for University-related travel and mobility.

The University has also delivered awareness workshops for staff and students emphasizing the importance of sustainable transportation and the environmental impacts of conventional travel modes. Complementary initiatives encourage more sustainable travel behaviors such as carpooling, public transportation, and walking where feasible. Together, these actions contribute to reducing emissions while fostering a stronger sustainability culture across campus.

Improvement

1. **Enhance Sustainable Procurement Practices (Transport-Related)**
   Action Taken:

   - Develop and implement a sustainable procurement policy that prioritizes lower-carbon products and services, with a specific focus on **transportation-related purchasing** (e.g., vehicle services, logistics, and travel services).
   - Integrate sustainability criteria into procurement contracts, encouraging suppliers to disclose relevant emissions and commit to reduction targets where applicable.

2. **Reduce Commuting Demand and Promote Sustainable Mobility**
   Action Taken:

   - Expand feasible remote learning options and flexible working arrangements to reduce unnecessary on-campus commuting, while maintaining service quality.
   - Strengthen IT infrastructure to support online learning, virtual meetings, and digital processes that reduce the need for travel.
   - Promote sustainable mobility for essential on-site activities by encouraging public transport, carpooling, and active mobility (walking/biking) where feasible.

3. **Address Residual Emissions Through Verified Measures (Toward Net-Zero 2028)**
   Action Taken:

   - Identify credible, high-quality carbon mitigation and/or offset options (where needed) that are verifiable and transparently documented, aligned with recognized standards.
   - Prioritize on-campus and community-based sustainability projects that directly reduce emissions and can be measured and reported transparently.
   - Establish partnerships to support larger-scale environmental projects that contribute to measurable climate benefits, subject to verification and governance procedures.

These actions are designed to address key drivers of the University's reported Scope 3 emissions (transportation) and can be refined as more data becomes available and as technologies and opportunities evolve. Their effectiveness depends on strong governance, continuous monitoring,

and active engagement of the University community to embed sustainability into institutional culture and operations.

References and Protocols

1. WRI and WBCSD. "Greenhouse Gases Protocol: A Corporate Accounting and Reporting Standard, Revised Edition." World Resources Institute, Washington, D.C., USA.
1. IPCC. "2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories." IPCC, Geneva, Switzerland.
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2. Al-Shatnawi, Z., Alnusairat, S. and Kakani, A., 2020. Towards zero solid waste in Jordanian universities: The case of Al-Ahliyya Amman University. Environmental Research, Engineering and Management, 76(4), pp.46-59.
3. The Hashemite *University's Carbon Emissions report for 2021-2022*, further grounding our metrics in local context and comparisons.

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