



# Al-Ahliyya Amman University

## Emissions Report

### Executive Summary

### Greenhouse Gases Protocol (GHG-P)

2023-2024

*Prepared by:*

*Sustainability Development Office*



*Please consider the environment before printing this report*



## 0.0 REPORT OVERVIEW

Al-Ahliyya Amman University has aligned its approach for quantifying carbon emissions with global standards by utilizing the Greenhouse Gases Protocol, which is recognized as the world's most widely used standard for greenhouse gas accounting. This commitment ensures consistency and reliability in their environmental reporting processes. Alongside using the Greenhouse Gases Protocol, they engage with several bodies for validation and enhancement of their reporting standards, including the Accreditation and Quality Assurance Commission for Higher Education Institutions (AQACHEI), Global Reporting Initiative (GRI), the United Nations Department of Economic and Social Affairs, and Lloyd's Register Quality Assurance (LRQA) in Jordan.

### This report provides a detailed summary of:

- **Scope 1 Emissions:** Direct emissions from our campus operations, including fleet and stationary combustion, and the improvements made in these areas.
- **Scope 2 Emissions:** Indirect emissions from electricity have been significantly reduced through our successful transition to renewable energy sources. As of now, we have achieved 75% utilization of renewable energy. We are in the final phase, Phase 4, of our transition plan, and are on track to reach 100% renewable energy usage by 2025.
- **Scope 3 Emissions:** Focused on transportation-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 throughout our administrative and student activities. A critical element of this integration is the formation of a student club specifically focused on sustainability, which actively involves our students in sustainable practices and initiatives across the university. Furthermore, we are thrilled to announce the launch of a new PhD program in Sustainability Management and Technology. This pioneering program represents a collaborative interdisciplinary effort involving four of our colleges: Business, Engineering, Information Technology, and Architecture. Designed to prepare future leaders, this program aims to seamlessly blend sustainability principles with technological advancements, 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 path toward our sustainability objectives, reinforcing our commitment to a **net-zero Target** by 2028 or before.



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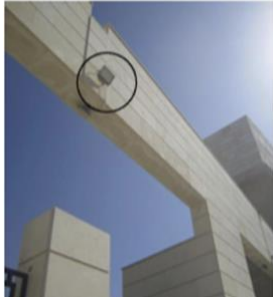
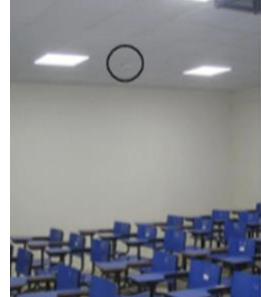
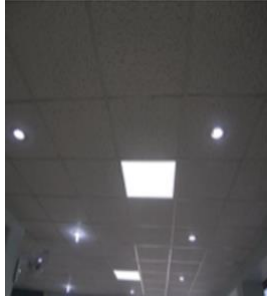







## 1.0 INTRODUCTION

Al-Ahliyya Amman University is proud to present its annual Carbon Emissions Report for the year 2023. As a forward-thinking educational institution, we are deeply committed to sustainability and environmental stewardship. This report is a testament to our dedication to tracking, measuring, and mitigating our carbon footprint, with a particular focus on our achievement of net-zero emissions.

At Al-Ahliyya Amman University, we have established the Sustainability Development Office, which is dedicated to ensuring that our strategic goals align with achieving our sustainability targets by 2028 or earlier. This office focuses not only on enhancing the sustainability of our academic staff and elevating our research visibility regionally and internationally, but also on ensuring that our administrative activities and student experiences are infused with sustainable practices. This commitment is demonstrated through the organization of numerous workshops and training courses designed to expand sustainability awareness within the university environment and contribute actively to action projects throughout Jordan.

Our curriculum at Al-Ahliyya Amman University incorporates sustainability across all levels, from undergraduate to postgraduate, covering fields such as Building Information Modeling, Project Management, Engineering, and Architecture. We're preparing to launch We emphasize the environmental, cost, social and operational dimensions of sustainability. We're launching a PhD program in Sustainability Management and Technology, combining disciplines like Business, Engineering, IT, and Architecture, to cultivate future leaders who integrate sustainability with technological innovation. Our goal is to prepare 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 Achievement of 100% Renewable Energy Usage by 2025

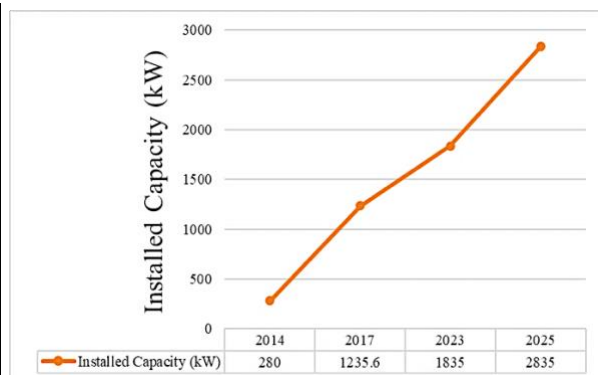
Al-Ahliyya Amman University has made significant strides toward achieving 100% renewable energy usage by 2025, progressing through a meticulously planned and executed journey in several phases. The transition began with the installation of the solar energy system in three distinct stages, each marked by an increase in capacity and production.

The first phase, launched in 2014, introduced a 280-kW capacity system that successfully connected to the grid, laying the groundwork for future expansions. This was followed by a more ambitious second phase in 2017, which added 955.6 kW of capacity, dramatically increasing the university's renewable energy output. The third phase, currently underway with a capacity of 600 capacity kW, has received all necessary approvals and is in the final stages of completion.

To date, the combined output from these phases covers 75% of the university's electricity consumption. To reach the 100% mark by 2025, a fourth phase is planned, which will add an additional 1 MW of capacity. This future expansion is essential not only to meet the current electricity needs but also to accommodate the expected increase in demand due to ongoing campus development.

Overall, from the initial 280 kW capacity to the impending completion of 1,835 kW capacity in total capacity, Al-Ahliyya Amman University's commitment to a sustainable and energy-independent future is clear. The university's journey towards 100% renewable energy is a testament to its dedication to environmental stewardship and its proactive approach to addressing the challenges of energy consumption and sustainability.

Year	Installed Capacity (kW)	Description
2014	280	<b>Phase 1:</b> Initial setup completion
2017	1235.6	<b>Phase 2:</b> Major expansion completion
2023	1835	<b>Phase 3:</b> Further expansion completion
2025	2835	<b>Phase 4:</b> Completion to 100%



This chart will visually represent the growth in installed capacity of renewable energy sources at Al-Ahliyya Amman University from 2014 to the planned full capacity in 2025, aiding in illustrating the university's commitment to achieving a sustainable future. Moreover, this progress will effectively and positively contribute to the reduction of total CO<sub>2</sub> emissions in Scope 2, as the university moves towards complete reliance on renewable energy sources.



## 1.2 The ISO Plan-Do-Check-Act Cycle Applied: Advancing Towards Our Net-Zero Target by 2028

- **Plan:** With the ambitious target of achieving net-zero emissions by 2028, we outlined strategic actions centered on maximizing energy efficiency, expanding renewable energy use, and promoting sustainable campus operations. This commitment ensures consistency and reliability in their environmental reporting processes. Alongside using the Greenhouse Gas Protocol, they engage with several bodies for validation and enhancement of their reporting standards, including the Accreditation and Quality Assurance Commission for Higher Education Institutions (AQACHEI), Global Reporting Initiative (GRI), the United Nations Department of Economic and Social Affairs, and Lloyd's Register Quality Assurance (LRQA) in Jordan.
- **Do:** Implementations included augmenting our solar energy infrastructure to ensure complete coverage across campus, updating our vehicle fleet to electric models, and enhancing building efficiency. Educational initiatives were also rolled out to engage our community in our green practices. At Al-Ahliyya Amman University, we have established the Sustainability Development Office with a mission to align our strategic objectives with our sustainability goals to be achieved by 2028 or sooner. This office is committed to improving the sustainability practices of our academic staff, increasing our research visibility both regionally and globally, and incorporating sustainable practices into our administrative functions and student experiences. We demonstrate our commitment by hosting numerous workshops and training sessions to enhance sustainability awareness within the university community and actively participating in sustainability projects across Jordan. Additionally, we established the student's sustainability clubs, a student-led organization dedicated to promoting sustainability on campus through various activities and projects that encourage active participation and awareness among students.
- **Check:** The effectiveness of our initiatives was rigorously monitored through evaluations and advanced data analytics. This included tracking energy consumption meticulously and verifying emission reductions against our historical data.
- **Act:** Based on our findings, we refined our strategies to optimize resource use, enhance waste management programs, and increase community engagement in our sustainability goals.

This structured application of the ISO Plan-Do-Check-Act cycle ensures that Al-Ahliyya Amman University not only moves confidently towards sustaining our net-zero status but also establishes ourselves as a leader in environmental responsibility within the higher education sector. This report details our progress, celebrating our successes while also outlining the path forward as we continue to innovate and improve our sustainability efforts.



## 2.0 METHODOLOGY

At Al-Ahliyya Amman University, our approach to quantifying carbon emissions is rooted in adherence to globally recognized standards and methodologies, ensuring robustness and consistency in our environmental reporting. We utilize the principles set forth by the Greenhouse Gases Protocol (GHG), the world's most widely used greenhouse gas accounting standards. Our efforts are 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 in environmental responsibility Accreditation and Quality Assurance Commission for Higher Education Institutions. Additionally, our alignment with the Global Reporting Initiative (GRI) ensures that our emissions reporting meets international criteria Global Reporting Initiative, United Nations Department of Economic and Social Affairs. We are also certified by Lloyd's Register Quality Assurance (LRQA) – Jordan, further establishing the credibility of our environmental initiatives Lloyd's Register Quality Assurance – Jordan.

- **Scope 1 Emissions:** Our assessment of Scope 1 emissions encompasses all direct emissions from sources that are owned or controlled by the university. This includes emissions from our campus fleet, any fossil fuels used for heating or other combustion processes within our facilities, and any other direct emissions that occur from our operations.
- **Scope 2 Emissions:** Scope 2 emissions in our report capture all indirect emissions from the generation of electricity that the university consumes. Given our transition to 100% renewable energy sources usage by 2025, as of now, we have achieved 75% utilization of renewable energy, these emissions are significantly reduced, aligning with our sustainability objectives.
- **Scope 3 Emissions:** For Scope 3, our focus is specifically on transportation-related activities, which include emissions from business travel, commuting practices of our students and staff, and the operation of vehicles not owned by the university but related to its function. This focused assessment helps us target one of the more variable aspects of our carbon footprint, offering strategic insights into areas where we can achieve significant reductions.

In calculating these emissions, we consider the carbon intensity of different energy sources used across our operations. This involves analyzing the type of fuels consumed, the efficiency of our vehicles and heating systems, and the specific energy mix of our electricity supply, even though it is sourced entirely from renewable energies. By applying these methodologies, Al-Ahliyya Amman University ensures that our 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 towards 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 (MTCO<sub>2</sub>E) per year. **(52K/Year)**.
- Another study suggests an average emission intensity of 19.39 MTCO<sub>2</sub>E per 1,000 gross square feet (GSF) **(19/93M<sup>2</sup>)**.and 7.67 MTCO<sub>2</sub>E 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 2021-2022*, further grounding our metrics in local context and comparisons.

### 4.0 Total CO<sub>2</sub> (tonnes) Summary

**The total CO<sub>2</sub> emissions have dropped from 1,434.3 tonnes in 2021 to 1,073.9 tonnes in 2023, representing a total reduction of 360.4 tonnes or -25.1%.** This significant decrease underscores the university's commitment to sustainability and its proactive approach towards achieving its goal of reducing environmental impact. The consistent year-over-year reduction across all scopes not only aligns with global environmental standards but also showcases the university's dedication to achieving its stated goal of increasing renewable energy usage and decreasing dependency on non-renewable sources. This proactive approach not only helps mitigate the university's operational





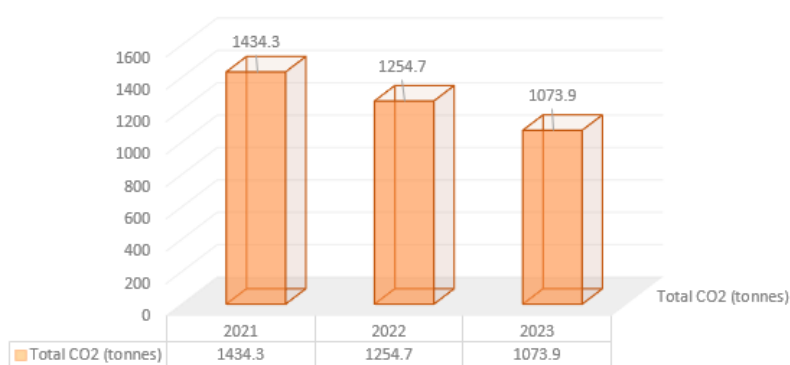
impact on the environment but also positions it as a leader in sustainability within the academic community.

SN	Scope	2021	2022	2023
1.	Scope 1	27.1	25.2	22.3
2.	Scope 2	241.3	193.1	144.8
3.	Scope 3- <i>Optional- Transportation</i>	1,165.9	1,036.4	906.8
	<b>Total CO2 (tonnes)</b>	<b>1434.3</b>	<b>1254.7</b>	<b>1073.9</b>

Total CO2 reduction (tonnes) 2021/2023 – **360.4, -25.1%**

Total CO2 (tonnes) Summary

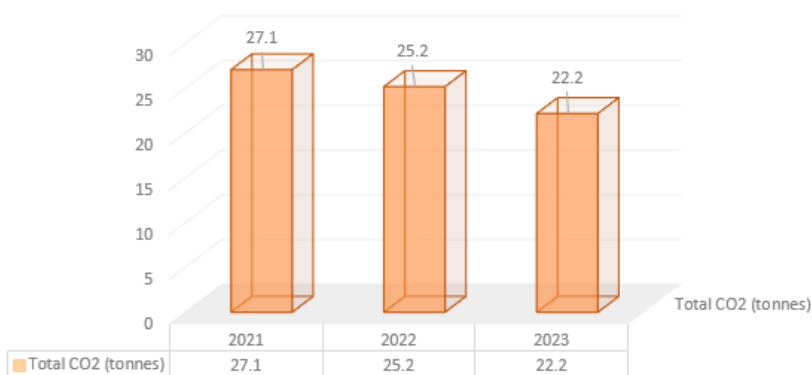
Total CO2 reduction (tonnes) 2021/2023 – 360.4, -25.1%



#### 4.1 Scope 1 Emissions

SN	Main Activity Type	2021	2022	2023
1.	Stationary combustion	13.6	12.3	11.1
2.	Mobile combustion	11.5	11.1	9.7
3.	Fugitive emissions from air-conditioning	2.0	1.8	1.4
	<b>Scope 1* – Total CO2 (tonnes)</b>	<b>27.1</b>	<b>25.2</b>	<b>22.2</b>

Scope 1 Emissions





## 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

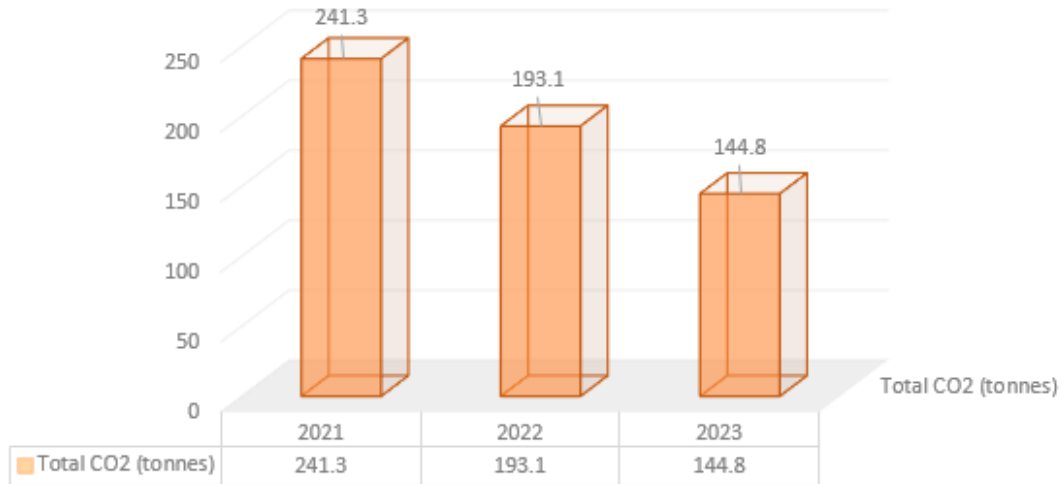
SN	Main Activity Type	2021	2022	2023
1.	Purchased Electricity	217.2	173.8	130.3
2.	Heat	24.1	19.3	14.5
	<b>Scope 2* – Total CO2 (tonnes)</b>	<b>241.3</b>	<b>193.1</b>	<b>144.8</b>

Achieving 75% utilization of renewable energy by 2023 is a remarkable milestone, especially as the university targets 100% by 2025. This strategy not only reduces dependence on non-renewable sources but also significantly lowers greenhouse gas emissions, as reflected in the Scope 2 figures. The emissions from purchased electricity have decreased significantly from 217.2 tonnes of CO<sub>2</sub> in 2021 to 130.3 tonnes in 2023. This substantial reduction by approximately 40% over three years



vividly illustrates the effectiveness of the university's strategy to integrate renewable energy into its power consumption matrix. There is also a noticeable decrease in emissions from purchased heat, from 24.1 tonnes in 2021 to 14.5 tonnes in 2023. This reduction, though on a smaller scale compared to electricity, complements the overall strategy of energy efficiency and transitioning to less carbon-intensive energy sources.

### Scope 2 Emissions



The significant reduction in Scope 2 emissions at Al-Ahliyya Amman University reflects its successful implementation of renewable energy technologies and commitment to a sustainable future. This journey not only highlights the university's role as a responsible environmental steward but also sets a benchmark for academic institutions globally. The final push towards 100% renewable energy will be pivotal, and continued diligence in this direction will further establish 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 its solar energy installations across the campus to cover additional buildings and facilities. This expansion includes the integration of energy storage systems to enhance the utility of generated solar power, ensuring a consistent and reliable supply of renewable energy even during off-peak sunlight hours.

#### 2. Improve Energy Efficiency

**Action Taken:** The university has deployed a systematic energy management system aimed at monitoring and optimizing energy usage across campus. Recent initiatives include upgrading to LED lighting, installing state-of-the-art HVAC systems, and replacing outdated appliances with models that meet the highest energy-efficiency standards. These



measures have effectively lowered the university’s total energy consumption and reliance on external energy sources.

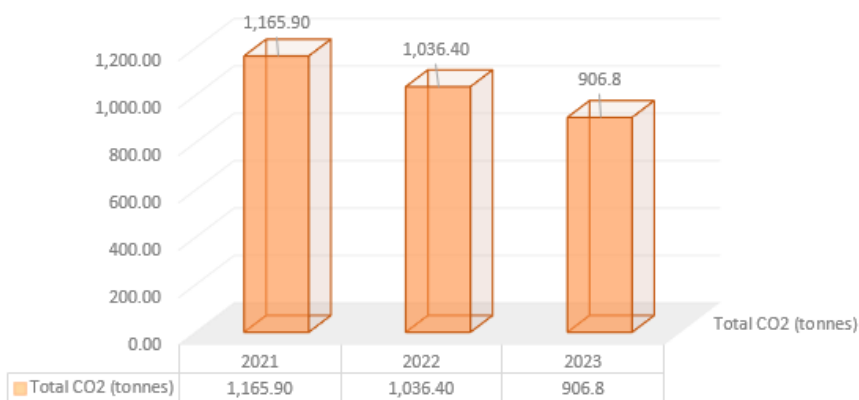
### 3. Adoption of Green Power and Renewable Energy Certificates (RECs)

**Action Taken:** Recognizing the limitations of on-site generation to meet all its energy needs, Al-Ahliyya Amman University has committed to purchasing green power from renewable energy sources for any additional requirements. Furthermore, the university invests in Renewable Energy Certificates (RECs) to cover 100% of its electricity usage, ensuring that every kilowatt-hour of electricity consumed on campus is offset by renewable energy generated elsewhere. This action supports the renewable energy sector and aligns with the university’s goal of achieving net-zero emissions by 2028.

### 4.3 Scope 3 Emissions

SN	Main Activity Type	2021	2022	2023
1.	Transportation	1,165.9	1,036.4	906.8
	<b>Scope 3* – Total CO2 (tonnes)</b>	<b>1,165.9</b>	<b>1,036.4</b>	<b>906.8</b>

#### Scope 3 Emissions



The emissions from transportation show a consistent decrease from 1,165.9 tonnes of CO2 in 2021 to 906.8 tonnes in 2023. This progressive reduction of nearly 22% over three years underscores the effectiveness of the university's strategies aimed at adopting greener transportation methods. The university is currently conducting several studies aimed at integrating more green vehicles into its transportation fleet. This involves evaluating the potential for replacing existing vehicles with more energy-efficient and lower-emission options, such as electric or hybrid vehicles. The transition to greener vehicles is a significant factor in the observed reduction of Scope 3 emissions. Al-Ahliyya Amman University has established several agreements with travel agencies that align with sustainability principles. These partnerships ensure that the transportation options provided for university-related travel, including student and staff mobility, are environmentally friendly and support the university's carbon reduction goals.



The university has conducted several workshops for staff and students emphasizing the importance of transitioning to more sustainable transportation solutions. These workshops serve to educate the university community about the environmental impacts of traditional transportation modes and the benefits of adopting greener alternatives. In addition to workshops, there are ongoing initiatives to encourage staff and students to adopt more sustainable travel habits. This includes promoting carpooling, the use of public transportation, and walking. These initiatives not only contribute to reducing emissions but also foster a culture of sustainability across the campus.

The ongoing efforts and gradual shifts in transportation habits indicate a significant cultural shift towards sustainability within the university community. By integrating educational aspects into its sustainability initiatives, the university ensures that the transition to greener transportation is accompanied by a deep understanding of its importance.

## **Improvement**

### **1. Enhance Sustainable Procurement Practices**

#### ***Action Taken:***

- Develop and implement a sustainable procurement policy that prioritizes products and services with lower carbon footprints.
- Engage suppliers through sustainability criteria in procurement contracts, encouraging them to disclose their emissions and commit to reduction targets.

### **2. Expand Telecommuting and Remote Operations**

#### ***Action Taken:***

- Promote and facilitate remote learning options and telecommuting policies for staff and students to reduce the need for daily commuting.
- Invest in robust IT infrastructure to support effective online learning and virtual meetings, reducing the necessity for physical travel.
- Implement incentives for students and staff to use sustainable modes of transportation, such as biking, public transit, or carpooling, for necessary on-site activities.

### **3. Offset Remaining Emissions Through Credible Projects**

#### ***Action Taken:***

- Identify and invest in high-quality carbon offset projects, such as reforestation, renewable energy projects, or community-based sustainability initiatives.
- Develop on-campus projects that can generate carbon credits, such as solar energy installations or sustainable land management practices.
- Establish partnerships with other organizations or networks to invest in large-scale environmental projects that offer verifiable carbon offsets.



These specific actions are designed to address the direct factors contributing to Scope 3 emissions at Al-Ahliyya Amman University and can be adapted as more data becomes available or as technology and opportunities evolve. The success of these initiatives would hinge on strong policy enforcement, continuous monitoring, and active engagement of the university community to embed sustainability deeply into the culture and operations of the institution.

### ***References and Protocols***

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6. The Hashemite *University's Carbon Emissions report for 2021-2022*, further grounding our metrics in local context and comparisons.

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