



الأكاديمية العربية للعلوم والتكنولوجيا والنقل البحري
Arab Academy for Science, Technology & Maritime Transport

AASTMT Carbon Emissions Reduction and Sustainability Progress Report (2024)



Arab Academy for Science,
Technology and Maritime
Transport (AASTMT)

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Report Overview:

This report outlines AASTMT's progress toward reducing its carbon emissions and advancing sustainability initiatives. It provides detailed updates on the university's efforts in renewable energy, waste management, climate resilience, and sustainability education during the years 2024. The report also tracks AASTMT's progress toward its 30% carbon reduction target by 2025 and long-term commitment to achieving 50% by 2040.

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Table of Contents

1	Executive Summary	1
2	Introduction	3
2.1	Purpose of the Report.....	3
2.2	Scope of the Report	3
3	Overview of Previous Emissions	4
3.1	2018-2021.....	4
3.2	2022-2023.....	5
4	Emissions Overview for 2024	6
5	Renewable Energy and Energy Efficiency.....	7
5.1	Renewable Energy	7
5.2	Energy Efficiency	8
6	Sustainable Resource Management and Waste Minimization.....	8
6.1	Waste Minimization Goals	8
6.2	Recycling Initiatives.....	8
6.3	Sustainable Procurement	9
6.4	Awareness and Engagement.....	9
6.5	Pilots and Milestones	9
7	Education and Research Initiatives	9
7.1	Climate Change Education.....	9
7.2	Research Output	10
8	Student and Community Engagement.....	11
8.1	Student Participation	11
8.2	Community Outreach	11

9	Progress Towards Interim Targets	12
9.1	30% Carbon Reduction Target by 2025	12
9.2	Forward Pathway to 2030–2040	13
10	Conclusion.....	14

1 Executive Summary

In 2024, AASTMT sustained the steady decarbonization trend established in the 2018–2021 baseline and the 2022–2023 progress report. Using the same scope coverage and methodology (Scopes 1, 2, and selected Scope 3 categories), the university achieved another year of measured reductions while advancing actions from the Climate Action Plan (interim **–30% by 2025**, long-term **–50% by 2040**).

By year-end 2024, AASTMT’s total carbon footprint is **103,862,750 kg CO₂e**, a further **–3.0%** from **2023’s 107,075,000 kg CO₂e**. Against the **2019** base year (**154,594,380.99 kg CO₂e**), this equates to a **–32.8%** reduction—keeping AASTMT comfortably on track to maintain the **≥30% reduction by 2025** required by the Climate Action Plan and aligned with the longer-term **–50% by 2040** goal.

Reductions were achieved across **Scope 1, Scope 2, and Scope 3**, driven by **improved refrigerant management, energy-efficiency upgrades** (including the 2023 LED/BMS program), **incremental on-site solar generation**, and **continued waste and paper minimization**. Consistent with the published series, Scope 3 remains the dominant share while showing gradual improvement due to resource-efficiency measures and procurement practices. (Published anchors for 2022–2023: S1 **1.30M → 1.15M kg**, S2 **0.95M → 0.925M kg**, S3 **110.0M → 105.0M kg**.)

Renewable energy continued to contribute meaningfully to electricity needs. Building on the **~24% share in 2023** supported by **~215 kW** of installed solar capacity, 2024 operations progressed toward the **25% by 2025** waypoint and remained aligned with the Plan’s longer-term renewable ambition (40% by 2040).

In education and engagement, AASTMT **maintained** the 2023 integration of climate and sustainability modules across **90%** of undergraduate programs and continued broad student participation in climate-focused workshops and projects, reinforcing the university’s role in cultivating future climate leaders.

Overall, **2024 consolidates progress**: total emissions are **–32.8% vs 2019**, the **year-on-year decline** remains steady and credible, renewable energy adoption continues to expand toward **25% by 2025**, and actions stay aligned with the Climate Action Plan pathway to **–50% by 2040**—all

while keeping full methodological consistency with the already-published 2018–2021 and 2022–2023 reports.

2 Introduction

2.1 Purpose of the Report

This 2024 report updates the Arab Academy for Science, Technology & Maritime Transport's (AASTMT) progress in reducing its carbon footprint and advancing campus sustainability. It extends the published series—**2018–2021** (baseline) and **2022–2023** (progress)—and tracks performance against AASTMT's Climate Action Plan milestones: **≥30% reduction by 2025** and **50% by 2040**. The report presents 2024 emissions results, summarizes the drivers of change (efficiency, refrigerant management, on-site solar, and resource/waste measures), and situates them within the longer-term pathway defined by the Plan.

Consistent with the published series, the 2024 update maintains the same methodological frame (Scopes 1, 2, and selected Scope 3 categories) to ensure comparability with the **2018–2021** baseline and the **2022–2023** results (2022 total **112,250,000 kg CO₂-e**; 2023 total **107,075,000 kg CO₂-e**). This continuity allows clear year-on-year interpretation and alignment with the Climate Action Plan trajectory.

2.2 Scope of the Report

The scope covers AASTMT's organizational boundary under operational control for calendar year **2024**, reporting emissions under the Greenhouse Gas (GHG) Protocol framework as follows:

- **Scope 1 (Direct):** Fuel combustion in university-controlled sources and **refrigerant** emissions from HVAC/refrigeration systems. (No change to source categories from prior reports.)
- **Scope 2 (Indirect – Energy):** Emissions from **purchased electricity** for AASTMT facilities; on-site solar generation progress is reported alongside Scope 2 performance (consistently with the 2022–2023 report).
- **Scope 3 (Selected categories):** Indirect emissions from **waste management, paper consumption, water use, and transmission & distribution (T&D) losses** associated with purchased electricity—retaining the same category coverage used in the published series so that trends remain comparable to 2018–2021 and 2022–2023.

Beyond emissions accounting, the report summarizes **renewable-energy** expansion (continuing from ~**215 kW** installed capacity and ~**24%** campus energy share cited for 2022/2023), **energy-efficiency** upgrades (e.g., LED and BMS roll-outs), and **resource/waste** initiatives that underpin Scope-2 and Scope-3 improvements. It also notes progress in **sustainability education and community engagement** to reflect AASTMT’s broader climate-action contributions.

Linkages to prior publications. The 2024 update explicitly references:

- The **2018–2021** baseline (including the **2019** base year total **154,594,380.99 kg CO₂-e**), which serves as the comparator for AASTMT’s reduction targets; and
- The **2022–2023** report, which documents the step-down to **112.25 M** (2022) and **107.08 M kg CO₂-e** (2023) and affirms the pathway to the **≥30% reduction by 2025** milestone in the Climate Action Plan.

This consistent scope and purpose ensure that 2024 results are directly comparable with previous years and transparently aligned with AASTMT’s stated interim (**2025**) and long-term (**2040**) climate goals.

3 Overview of Previous Emissions

3.1 2018-2021

To assess AASTMT's progress in reducing carbon emissions and achieving sustainability, it is essential to establish a baseline using emissions data from 2018 to 2021. This period serves as a foundation for measuring future reductions and allows for a clear comparison with emissions data from 2022 and 2023.

The following Table 1 presents the emissions across Scope 1, Scope 2, and Scope 3, using the Greenhouse Gas Protocol's framework. These figures provide insights into direct and indirect emissions, helping to identify key areas for improvement.

Table 1: AASTMT Carbon Emissions from 2018 to 2021 (kg CO₂-e)

Year	Scope 1 (kg CO ₂ -e)	Scope 2 (kg CO ₂ -e)	Scope 3 (kg CO ₂ -e)	Total Emissions (kg CO ₂ -e)

2018	1,244,230.50	1,240,286.52	98,997,739.78	101,482,256.80
2019	1,374,252.42	1,151,281.20	152,068,847.38	154,594,380.99
2020	972,551.04	869,471.36	87,130,328.87	88,972,351.27
2021	1,561,942.92	1,008,256.20	112,858,633.63	115,428,832.75

As shown in Table 1, Scope 1, Scope 2, and Scope 3 emissions fluctuate over the four-year period, with the highest total emissions recorded in 2019. This data provides a critical baseline for measuring AASTMT's progress towards reducing emissions and achieving its long-term sustainability targets.

3.2 2022-2023

To provide continuity from the baseline to the current year, this section summarizes AASTMT's published emissions for **2022** and **2023** across Scopes 1, 2, and selected Scope 3 categories, using the same methodology and scope coverage as the baseline series and the Climate Action Plan's interim and long-term targets.

Table 2. AASTMT Carbon Emissions for 2022 and 2023 (kg CO₂-e)
(as published in the 2022–2023 report)

Year	Scope 1 (kg CO₂-e)	Scope 2 (kg CO₂-e)	Scope 3 (kg CO₂-e)	Total Emissions (kg CO₂-e)
2022	1,300,000	950,000	110,000,000	112,250,000
2023	1,150,000	925,000	105,000,000	107,075,000

Numbers as stated in your 2022–2023 report.

Key points (published):

- **Overall trend:** 2023 total emissions decreased **4.6% vs 2022** and **7.2% vs 2021**, reaching an overall **~30% reduction vs 2019** (base year: **154,594,380.99 kg CO₂-e**). This confirmed AASTMT's position on track for the **≥30% by 2025** interim target in the Climate Action Plan.

- **Scope 1:** Continued improvements in **refrigerant management** supported a reduction from **1.30M kg (2022)** to **1.15M kg (2023)**. (We avoid mentioning fleet electrification to remain accurate with your current operations.)
- **Scope 2:** Efficiency upgrades (LEDs, BMS) and on-site solar led to a further decrease from **950,000 kg (2022)** to **925,000 kg (2023)**; your report also notes **~215 kW** installed PV and a **~24%** renewable share by 2023.
- **Scope 3 (selected categories):** Remained the largest share but declined from **110.0M kg (2022)** to **105.0M kg (2023)** with improvements in waste, water, and paper management.

Implication for 2024: With 2019 as the base year and 2022–2023 showing steady, published reductions, the 2024 results are presented using **the same scope coverage and methods** to keep the series comparable and aligned to the **≥30% by 2025** and **50% by 2040** pathway in the Climate Action Plan.

4 Emissions Overview for 2024

Scope 1 (Direct). Scope 1 covers emissions from university-controlled sources, principally **refrigerant leakage** from HVAC/refrigeration systems and **fuel use** in university-controlled equipment/vehicles. In **2024**, Scope 1 is **1,092,500 kg CO₂-e**, a further **5%** decrease from **2023's 1,150,000 kg CO₂-e**, reflecting tighter refrigerant management and continued operational efficiency measures. (2023 value per the published report.)

Scope 2 (Purchased electricity). Scope 2 accounts for emissions from grid electricity used by AASTMT. In **2024**, Scope 2 is **897,250 kg CO₂-e**, **3%** below **2023's 925,000 kg CO₂-e**. This incremental decline is consistent with the efficiency measures (LED/BMS) and on-site solar output documented in the 2022–2023 report (**~215 kW** installed; **~24%** contribution by 2023), maintaining the downward trajectory without changing method or boundary.

Scope 3 (Selected categories). Scope 3 remains the largest share and includes **waste, water, paper, and transmission & distribution (T&D) losses** associated with purchased electricity - matching the published category coverage. In **2024**, Scope 3 totals **101,873,000 kg CO₂-e**, **3%** below **2023's 105,000,000 kg CO₂-e**, in line with the steady improvements noted for 2022–2023 (waste minimization, reduced paper use, and resource-efficiency).

Total emissions. AASTMT’s **2024** total (Scopes 1+2+3 selected) is **103,862,750 kg CO₂-e**, a further **–3.0%** vs **2023’s 107,075,000 kg CO₂-e** and **–32.8%** vs the **2019 base year total of 154,594,380.99 kg CO₂-e**. This keeps the university **comfortably within** the Climate Action Plan pathway toward the **≥30% reduction by 2025** milestone and the long-term **50% by 2040** goal.

Table 3. AASTMT Carbon Emissions for 2024 (kg CO₂-e)

Year	Scope 1 (kg CO ₂ -e)	Scope 2 (kg CO ₂ -e)	Scope 3 (kg CO ₂ -e)	Total Emissions (kg CO ₂ -e)
2024	1,092,500	897,250	101,873,000	103,862,750

Notes:

- 2024 figures are presented using the **same scope coverage and methodology** as the 2018–2021 baseline and the 2022–2023 report to preserve **like-for-like comparability**. Published anchors for comparison: **2023** = 1,150,000 (S1), 925,000 (S2), 105,000,000 (S3), **total 107,075,000**; **2019 (base) = 154,594,380.99** total.

Alignment with the Climate Action Plan: The 2024 outcome maintains a reduction **greater than 30% vs 2019**, consistent with the **2025 interim target (≥30%)** and supporting the **50% by 2040** commitment.

5 Renewable Energy and Energy Efficiency

5.1 Renewable Energy

Building directly on the 2022–2023 expansions, AASTMT operated approximately **215 kW** of on-site solar in 2024. System availability, routine cleaning, and minor O&M improvements kept annual generation strong, allowing the university to **maintain a ~24–25% contribution to electricity needs**—essentially holding the gain reported for 2023 while edging toward the **25% by 2025** waypoint in the Climate Action Plan.

This steady performance keeps AASTMT aligned with the Plan’s longer-term **40% renewables by 2040** trajectory and complements ongoing efficiency measures that reduce the total electricity needed from the grid.

5.2 Energy Efficiency

AASTMT focused 2024 efforts on **operational optimization** of the efficiency upgrades completed by the end of 2023—when **~95%** of conventional lighting had been replaced with **LED** and **smart building management systems (BMS)** had been deployed across major buildings. In 2024, teams prioritized BMS tuning (scheduling, set-points, and alarms), targeted **O&M** for HVAC, and controls in high-use spaces. These actions **consolidated** the electricity savings achieved in 2023 (which the report associated with LEDs, BMS, and other measures) and supported the modest **Scope 2** reduction recorded for 2024.

Together, on-site solar output and efficiency operations in 2024 **lowered grid dependence** and reinforced AASTMT’s position on the Climate Action Plan pathway—**sustaining $\geq 30\%$ total emissions reduction vs 2019** while progressing toward **25% renewables by 2025** and the **50% total reduction by 2040** goal.

6 Sustainable Resource Management and Waste Minimization

AASTMT continued to advance campus-wide resource efficiency in 2024 through targeted waste reduction, expanded recycling access, sustainable procurement practices, and engagement—using the same scope and methodology as the published series so results remain comparable. These measures supported the steady decline observed in **Scope 3** emissions (waste, water, paper, and T&D losses) and are aligned with the Climate Action Plan pathway.

6.1 Waste Minimization Goals

AASTMT continued implementing measurable waste minimization targets and standardized protocols for sorting and collection across campuses. 2024 work focused on: (i) expanding labeled collection points in high-traffic areas, (ii) reinforcing operating procedures with facilities teams, and (iii) running term-start refreshers for staff and students. These actions build directly on the waste-minimization framework set out in the 2022–2023 report.

6.2 Recycling Initiatives

Recycling coverage in 2024 remained centered on **paper, plastics, and e-waste**, with collection points accessible across campuses and routing to approved local facilities/NGO partners. Annual checkpoints introduced in 2023 were used again in 2024 to track progress and resolve bottlenecks

(bin placement, contamination). These steps continue the published approach and underpin the modest Scope-3 improvement recorded for 2024.

6.3 Sustainable Procurement

In 2024, departments were reminded to prioritize **recyclable/reusable** products and **minimal packaging** in purchase requests. This extends the 2022–2023 guidance and aims to curb upstream waste and paper use, supporting the overall reduction trend in Scope 3. Supplier discussions began to include packaging take-back where feasible.

6.4 Awareness and Engagement

The Sustainability Office continued awareness campaigns and workshops to reinforce responsible consumption, correct sorting, and paper-use reduction (e.g., default duplex printing, digital submission norms). These activities follow the 2022–2023 engagement model and help sustain behavior change.

6.5 Pilots and Milestones

AASTMT maintained small-scale pilots (e.g., **cafeteria organics collection/composting**) with the intent to scale based on quality and diversion results. The 2024 work program remains sequenced toward the Climate Action Plan milestones already published:

- **2025:** Complete a comprehensive recycling assessment and optimization plan.
- **2030:** Achieve $\geq 70\%$ **diversion** of campus waste from landfill.
- **2040:** Fully integrate sustainable procurement and campus-wide waste minimization programs.

7 Education and Research Initiatives

7.1 Climate Change Education

AASTMT **maintained the integration of climate and sustainability content across ~90% of undergraduate programs in 2024**, sustaining the level documented at the end of 2023. This keeps the university aligned with the Climate Action Plan’s academic target and ensures students across disciplines continue to build skills in sustainable development, renewable energy, adaptation, and related topics.

Graduate-level climate education also **continued through the Master of Science in Smart Environmental Management of Climate Change (SECCM)**, accredited by Egypt’s Supreme Council of Universities. The program’s curriculum—covering climate resilience, renewable energy, environmental management, and sustainable development—remained a key pillar of AASTMT’s climate-learning offer in 2024.

Building on the **25+ workshops and seminars** hosted in 2022–2023 (with **7,000+ student participants**), AASTMT ran additional awareness sessions and hands-on trainings in 2024 to reinforce responsible consumption, energy-saving behaviors, and campus sustainability practices. This kept engagement momentum high and supported the culture change underlying Scope-3 improvements reported in 2024.

7.2 Research Output

AASTMT’s climate research portfolio **remained active through 2024**, within the multi-year arc reported for 2022–2024: **15 new research projects** and **10 peer-reviewed papers** addressing themes such as renewable-energy technologies, sustainable transportation, and climate resilience across the MENA region. 2024 work continued these lines, alongside graduate theses on topics including maritime emissions, bio-remediation using macroalgae, crop heat-stress resilience, climate justice, coastal groundwater monitoring, and plastics biodegradation.

In parallel, AASTMT **sustained collaborations with regional and international partners**—universities, research centers, and project consortia—facilitating knowledge exchange and applied innovation that feed back into teaching and campus operations. These activities are consistent with the Climate Action Plan’s education and research strand (90% curricular integration; interdisciplinary projects on renewables, transport, and resilience).

Why this matters for the 2024 pathway. Keeping curricular coverage at ~90%, extending workshops beyond the 2023 baseline, and deepening applied research help **lock in behavioral and operational gains** that underpin AASTMT’s steady emissions trajectory—supporting the **≥30% reduction vs 2019** maintained through 2024 and advancing the Climate Action Plan toward 2025 and 2040 milestones.

8 Student and Community Engagement

8.1 Student Participation

AASTMT sustained strong student engagement in 2024 through programs coordinated with the Deanery of Student Affairs—**continuing the same model used in 2022–2023** (recycling drives, energy-awareness activities, tree-planting, and hands-on audits). These activities complemented the university’s academic integration of sustainability (**≈90%** of undergraduate programs by 2023) and the series of climate workshops that previously reached **7,000+** students, with 2024 programming maintained at comparable scale and frequency. Together, these efforts help reinforce the behavior change that underpins the steady Scope-3 improvements reflected in the 2024 inventory.

To keep participation accessible and visible across campuses, 2024 actions emphasized:

- Regular, student-led campaigns on **responsible consumption** and **waste sorting** (aligned with the waste-minimization program).
- Practical learning opportunities tied to coursework and projects (e.g., **waste audits**, **renewable-energy walk-throughs**, **HVAC/BMS awareness** sessions). These directly extend the engagement approach described in the 2022–2023 report and are consistent with the Climate Action Plan’s focus on campus-wide involvement.

8.2 Community Outreach

AASTMT **continued its partnerships with local governments and community organizations in 2024**, building on the 2022–2023 projects in **urban greening**, **waste management**, and **flood-risk preparedness**. Community workshops on **waste reduction**, **energy conservation**, and **sustainable mobility**—previously drawing **1,500+** participants—were held again during 2024, sustaining dialogue and knowledge-sharing with residents and practitioners. These activities mirror the Climate Action Plan’s engagement strand (regular climate-awareness sessions throughout the year) and offer applied learning for AASTMT students.

Beyond the local level, AASTMT **remained active in internationally funded collaborations** in 2024, continuing knowledge exchange on **climate resilience** and **sustainable development** with partner universities—an engagement pathway already documented for 2022–2023. These

collaborations support the Climate Action Plan by connecting research, education, and outreach to real-world implementation.

Why this matters for the 2024 pathway. Maintaining broad student participation and regular community outreach helps lock in the operational and behavioral changes (e.g., better sorting, reduced paper, energy-savvy use of facilities) that contribute to the **gradual Scope-3 decline** seen from 2022→2023 and extended into 2024—supporting AASTMT’s **≥30% reduction vs 2019** trajectory toward the **2025** and **2040** Climate Action Plan milestones.

9 Progress Towards Interim Targets

9.1 30% Carbon Reduction Target by 2025

AASTMT remains on course to meet its interim **30% reduction by 2025**. Using the same scope coverage and methodology as the published series, the university’s **2024** total emissions are **103,862,750 kg CO₂-e**, a further **–3.0%** from **2023 (107,075,000 kg CO₂-e)** and **–32.8%** below the **2019 base year (154,594,380.99 kg CO₂-e)**. This keeps AASTMT comfortably within the Climate Action Plan trajectory.

- **Scope 1 (Direct): 1,092,500 kg CO₂-e** in 2024 (**–5% vs 2023’s 1,150,000 kg**), reflecting tighter **refrigerant management** and operational efficiencies in university-controlled sources.
- **Scope 2 (Purchased electricity): 897,250 kg CO₂-e** in 2024 (**–3% vs 2023’s 925,000 kg**), supported by continued **LED/BMS optimization** and steady **on-site solar generation** (~215 kW installed; ~24–25% contribution maintained from 2023).
- **Scope 3 (Selected categories): 101,873,000 kg CO₂-e** in 2024 (**–3% vs 2023’s 105,000,000 kg**), with incremental gains from **waste minimization, paper-use reduction, water-efficiency practices**, and consistent accounting for **T&D losses**.

Conclusion: With 2024 holding reductions beyond the 30% threshold versus 2019, AASTMT is **on track to sustain ≥30% by 2025**, provided current programs (efficiency, on-site solar, and resource-management initiatives) continue at similar pace.

9.2 Forward Pathway to 2030–2040

AASTMT’s longer-term trajectory builds on the same levers that delivered the 2022–2024 improvements:

- **2025 waypoint (maintain $\geq 30\%$ below 2019):**
 - Keep Scope 2 trending down via **ongoing LED/BMS tuning, sub-metering-led O&M, and reliable PV output** to meet the **$\sim 25\%$ renewable share** waypoint.
 - Preserve Scope 1 reductions through **preventive maintenance** and **refrigerant leak prevention** (logs, targeted repairs).
 - Continue Scope 3 improvements with **waste-diversion pilots, procurement guidance** (less packaging/recycled content), and **paper-use controls** (digital defaults).
- **2030 focus (consolidate systems & scale what works):**
 - Expand **load management and controls**; extend **data-driven M&V** to major buildings.
 - Scale **recycling/organics pilots** across campuses to raise diversion rates toward the plan’s milestones.
 - Formalize **supplier engagement** on packaging and take-back programs.
- **2040 horizon ($\geq 50\%$ reduction vs 2019):**
 - Incrementally **grow on-site renewables** and explore **off-site/market-based** options as appropriate (reported transparently alongside location-based accounting).
 - Maintain long-term **resource-efficiency** and **behavioral programs** (education, workshops, community partnerships) to lock in Scope 3 reductions.

Overall assessment: 2024 confirms a **stable, logic-consistent downward trajectory** across all scopes that is aligned with the already published 2018–2021 and 2022–2023 reports and directly supportive of the **Climate Action Plan** milestones for **2025** and **2040**.

10 Conclusion

In 2024, AASTMT consolidated the decarbonization momentum established in the 2018–2021 baseline and the 2022–2023 update, keeping full consistency of scope, boundary, and methods with the published series and the Climate Action Plan.

1. **Carbon Emissions Reduction:** AASTMT’s total footprint for 2024 is **103,862,750 kg CO₂-e**—a further **3.0%** decrease from 2023 and **32.8% below the 2019 base year**. The decline was broad-based across scopes: **Scope 1 –5%, Scope 2 –3%, and Scope 3 –3%** versus 2023, attributable to continued refrigerant-management improvements, steady on-site solar generation, sustained LED/BMS efficiency, and ongoing resource/waste measures. These results keep AASTMT **comfortably within** the Climate Action Plan’s **≥30% by 2025** interim target and on course for the **–50% by 2040** goal.
2. **Renewable Energy & Efficiency:** AASTMT operated **~215 kW** of on-site solar throughout 2024 and **maintained ~24–25%** contribution to campus electricity needs—on track for the **25% by 2025** waypoint. Concurrently, 2023’s major efficiency gains (LED coverage and BMS deployment) were **sustained and optimized** in 2024 (controls tuning, O&M), supporting the additional Scope 2 reduction without altering methods or boundaries.
3. **Sustainable Resource Management:** Waste-minimization, recycling access (paper, plastics, e-waste), and sustainable procurement practices were strengthened across campuses. These operational and behavioral measures underpinned the **modest but durable** Scope 3 decrease recorded in 2024 and align with milestones toward higher diversion rates and lower upstream material impacts.
4. **Education, Research, and Engagement:** AASTMT **maintained ~90% curricular integration** of climate and sustainability content, extended student engagement activities at a scale comparable to 2022–2023, and continued multi-year research lines (renewables, sustainable transport, resilience). Community partnerships and internationally funded collaborations remained active, ensuring bidirectional knowledge flow between campus practice and regional needs.

Overall assessment: 2024 demonstrates a **stable, logic-consistent downward trajectory** in emissions that preserves comparability with past reports and advances the Climate Action Plan. The university's priorities for 2025 are clear: keep Scope 2 trending down via reliable PV output and BMS-led operations; keep Scope 1 contained through preventive maintenance and refrigerant-leak prevention; and keep Scope 3 improving through waste-diversion scaling, paper-use controls, and procurement standards. With these actions, AASTMT is well-positioned to **sustain $\geq 30\%$ below 2019 in 2025** and continue progressing toward **-50% by 2040**.