

Al-Hadba University Sustainability Report

2025

Institution: Al-Hadba University

Location: Mosul, Iraq

Website: <https://hu.edu.iq>

SDG Portal: <http://sdg.hu.edu.iq>

Report Year: 2025 (update of the 2024 baseline report)

Executive Summary

Al-Hadba University demonstrates strong commitment to environmental sustainability through comprehensive carbon management, innovative reduction strategies, and integration of sustainability principles across campus operations. With a current carbon footprint of 4,822 tonnes CO₂e and an ambitious 45% reduction target by 2030, the university is positioning itself as a regional leader in higher education sustainability.

Key Achievements:

- Established comprehensive baseline carbon footprint assessment
- Developed science-based carbon reduction plan with \$9.52 million investment
- Per-student emissions (0.69 tonnes CO₂e) below global university average
- Committed to carbon neutrality by 2040

Progress Since the 2024 Baseline (2025–2026)

Since the 2024 baseline was set, Al-Hadba University has moved from planning to delivery. The measures below are now in place on campus; their effect on the carbon footprint will be quantified in the next full greenhouse gas inventory.

Achievements 2025–2026:

- **Removal of local diesel generators:** The University has removed its local generators, eliminating the main source of on-site fuel combustion (385 tonnes CO₂e of Scope 1 emissions in the 2024 baseline) together with the associated noise and local air pollution. [Two diesel generators, each with a maximum capacity of 1 MW, were removed.]

- **Solar electricity:** A new solar photovoltaic system now supplies part of the campus electricity, reducing demand on the grid (Scope 2) and bringing forward Phase 1 of the renewable energy strategy. [Installed capacity: 166 kW; share of the Haram's electricity: 10%]
 - **“10,000 Trees” project:** Launched in May 2026 by the University President, Prof. Dr. Badie Ali Ahmed, the project is planting 10,000 trees on land around the campus in phases, with ongoing maintenance. The trees will absorb carbon, improve local air quality and create shaded gardens and walkways, with students, staff and local residents taking part. [Number of trees planted so far: 1,000]
 - **Waste treatment:** The University has introduced waste sorting and treatment on campus, moving its waste management from plans to practice. [Details: Waste is sorted; paper and plastic waste are sold to contractors, while the university itself handles the collection and transport of other types of waste to designated landfill sites to prevent misuse by contractors.]
 - **Sustainability education:** A 2-ECTS module on the UN Sustainable Development Goals is now taught to first-level students in all study programmes.
 - **Sustainability policies:** The University has adopted six sustainability policies, including a Smoke-Free Policy, an Equality, Diversity and Inclusion Policy and a Pay Scale Equity Policy, published on the SDG portal.
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1. Setting and Infrastructure (SI)

1.1 Campus Overview

- **Total Area:** Multi-building campus in Mosul, Nineveh, Iraq
- **Buildings:** Multiple 3-story academic and administrative buildings
- **Student Population:** 7,000 students
- **Staff:** 300 academic and administrative personnel
- **Established:** Leading higher education institution in Nineveh Governorate

1.2 Green Infrastructure Initiatives

Current Infrastructure:

- Modern campus with efficient building layouts
- Multi-story buildings optimizing land use

- Integrated campus design supporting sustainable operations
- Solar photovoltaic system in operation
- Campus operating without local diesel generators
- “10,000 Trees” afforestation area around the campus

Planned Green Infrastructure (2024-2030):

- **Renewable Energy Systems:** 800 kW solar PV installation across rooftops
- **Solar Carports:** 1.2 MW solar carport development
- **Building Envelope Improvements:** \$1.5 million investment in energy-efficient building upgrades
- **Smart Building Systems:** Implementation of intelligent building management systems
- **Green Transportation Infrastructure:** EV charging stations and bicycle infrastructure

1.3 Sustainability Integration

- Dedicated Quality Assurance - Sustainability Office
 - Sustainability governance structure with steering committee
 - Integration of sustainability principles in campus planning and development
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2. Energy and Climate Change (EC)

2.1 Current Energy Profile

Total Carbon Footprint (2024 Baseline): 4,822 tonnes CO₂e

Energy Consumption Breakdown:

- **Scope 1 (Direct Emissions):** 752 tonnes CO₂e (15.6%)
 - On-site fuel consumption: 385 tonnes CO₂e
 - Refrigerant leakage: 367 tonnes CO₂e
- **Scope 2 (Electricity):** 1,584 tonnes CO₂e (32.8%)
 - Grid electricity consumption across all facilities
- **Scope 3 (Indirect):** 2,486 tonnes CO₂e (51.6%)

2.2 Energy Efficiency Measures

Implemented Initiatives:

- Systematic energy monitoring and reporting
- Building-specific energy management protocols

- Equipment optimization and maintenance programs

Planned Energy Efficiency (2024-2030):

- **LED Lighting Retrofit:** Campus-wide conversion reducing 316 tonnes CO₂e
- **HVAC Optimization:** Smart scheduling and zone-based controls
- **Building Envelope Upgrades:** Enhanced insulation and energy-efficient windows
- **Energy Management Systems:** Real-time monitoring and automated optimization

2.3 Renewable Energy Development

Renewable Energy Strategy:

- **Phase 1 (2024-2026):** 200 kW initial solar installation (now in operation: 100 kW)
- **Phase 2 (2026-2028):** 800 kW rooftop solar expansion
- **Phase 3 (2028-2030):** 1.2 MW solar carport development
- **Total Planned Capacity:** 2.2 MW renewable energy generation
- **Projected Reduction:** 475 tonnes CO₂e annually

Additional Renewable Initiatives:

- Renewable energy certificates (RECs) procurement
- Community solar participation exploration
- Small-scale wind energy demonstration potential

2.4 Climate Action Commitments

Reduction Targets:

- **2026:** 15% reduction (723 tonnes CO₂e)
- **2028:** 30% reduction (1,447 tonnes CO₂e)
- **2030:** 45% reduction (2,170 tonnes CO₂e)
- **2040:** Carbon neutrality achievement

Science-Based Approach:

- Alignment with international climate science recommendations
- Greenhouse Gas Protocol methodology compliance
- Regular monitoring and verification protocols

3. Waste Management (WS)

3.1 Current Waste Profile

Waste-Related Emissions: 148 tonnes CO₂e

- Solid waste disposal
- Wastewater treatment

3.2 Waste Reduction Strategy

Comprehensive Waste Management Program:

- **Target Reduction:** 74 tonnes CO₂e through waste initiatives
- **Landfill Diversion Goal:** 65% waste diversion rate
- **Investment:** \$400,000 in waste management systems

Key Initiatives:

1. **Recycling Infrastructure:** Comprehensive campus-wide recycling program
2. **Composting Program:** Food and organic waste composting system
3. **Zero-Waste Events:** Policy implementation for campus events
4. **Paper Reduction:** 70% reduction through digitization initiatives
5. **Waste Treatment:** On-site waste sorting and treatment now in place

3.3 Circular Economy Practices

- Lifecycle assessment integration for major purchases
 - Sustainable procurement guidelines with waste reduction criteria
 - Campus-wide awareness and education programs
 - Student and staff engagement in waste reduction activities
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4. Water Management (WR)

4.1 Water Consumption Profile

Current Water-Related Emissions: 150 tonnes CO₂e

- Energy consumption for water supply and treatment
- Distribution system operations

4.2 Water Conservation Strategy

Conservation Target: 65 tonnes CO₂e reduction through water initiatives **Investment:** \$320,000 in water conservation measures

Water Efficiency Initiatives:

1. **Efficient Fixtures:** Installation of water-efficient fixtures and appliances
2. **Smart Irrigation:** Intelligent landscape irrigation systems
3. **Rainwater Harvesting:** Capture and reuse systems for landscape irrigation
4. **System Upgrades:** Enhanced water pumping and distribution efficiency

4.3 Water Quality and Management

- Comprehensive water quality monitoring
 - Sustainable landscaping with drought-resistant plantings
 - Integration of water conservation in campus design standards
 - Student and staff education on water conservation practices
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5. Transportation (TR)

5.1 Current Transportation Profile

Transportation Emissions: 1,275 tonnes CO₂e (26.4% of total footprint)

- Student commuting: 1,050 tonnes CO₂e
- Staff and faculty commuting: 225 tonnes CO₂e

Business Travel: 328 tonnes CO₂e

- Air travel for conferences and academic events
- Ground transportation for university business

5.2 Sustainable Transportation Strategy

Target Reduction: 497 tonnes CO₂e through transportation initiatives **Investment:** \$750,000 in sustainable transportation infrastructure

Key Transportation Initiatives:

1. **Campus Fleet Electrification:**
 - 75% fossil fuel vehicle replacement by 2028
 - EV charging infrastructure powered by renewable energy

- Campus-wide electric shuttle system implementation
- Projected reduction: 115 tonnes CO₂e

2. Alternative Transportation Programs:

- Comprehensive carpooling platform development
- Bicycle infrastructure expansion and bike-sharing program
- Reduced-fare public transportation partnerships
- Remote work and hybrid learning policy implementation

3. Business Travel Alternatives:

- Virtual conferencing capabilities enhancement
- Sustainable travel policy implementation
- Departmental carbon budgets establishment
- Carbon offset program for essential travel

5.3 Transportation Infrastructure

- Bicycle lanes and secure bike storage facilities
 - Electric vehicle charging stations
 - Public transportation connectivity improvements
 - Pedestrian-friendly campus design enhancements
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6. Education and Research (ED)

6.1 Sustainability Education Integration

Curriculum Development:

- Sustainability-focused general education requirements
- Climate action case studies across disciplines
- Living laboratory projects utilizing campus sustainability initiatives
- Sustainability-focused degrees and certificate programs

Educational Programs:

- Student sustainability ambassador program
- Green dorm certification initiatives
- Sustainability-themed events and competitions
- Climate literacy programs for students and staff

6.2 Research and Innovation

Research Initiatives:

- Carbon reduction research grants program
- Climate solutions innovation laboratory
- Student-faculty collaborative sustainability research
- Regional climate resilience partnerships

Knowledge Dissemination:

- Public sustainability lecture series
- Community-facing sustainability projects
- Regional sustainability leadership network participation
- Academic publications on sustainability practices

6.3 Community Engagement

External Partnerships:

- Climate action partnerships with local organizations
- Regional sustainability collaboration networks
- Corporate and foundation sustainability partnerships
- Alumni sustainability fundraising campaigns

Community Impact:

- Living laboratory demonstrations for community learning
 - Sustainability best practices sharing with regional institutions
 - Public access to sustainability resources and education
 - Community sustainability project partnerships
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7. Governance and Management

7.1 Sustainability Governance Structure

Leadership:

- **Sustainability Steering Committee:** Led by University President
- **Carbon Reduction Task Force:** Operational implementation team
- **Quality Assurance - Sustainability Office:** Dedicated sustainability management

Committee Composition:

- University senior leadership
- Faculty representatives
- Student representatives
- Facilities and operations managers
- Academic sustainability champions

7.2 Monitoring and Accountability

Performance Tracking:

- Annual comprehensive GHG emissions measurement
- Quarterly progress reports with key performance indicators
- Public dashboard for transparency and progress reporting
- Annual sustainability report publication

Key Performance Indicators:

- Absolute carbon reduction (tonnes CO₂e/year)
- Energy intensity (kWh/m² building space)
- Renewable energy percentage
- Waste diversion rate
- Sustainable transportation adoption
- Water use intensity per student

7.3 Financial Sustainability

Investment Strategy:

- **Total Investment Commitment:** \$9.52 million (2024-2030)
- **Projected Annual Savings:** \$605,000/year at full implementation
- **Green Revolving Fund:** Reinvestment of energy savings
- **External Funding:** Government grants, climate finance, partnerships

Return on Investment:

- Simple payback period: 15.7 years
- Net present value: \$2.3 million (20-year horizon)
- Internal rate of return: 7.2%

8. Future Commitments and Goals

8.1 Strategic Objectives (2024-2030)

Phase 1 (2024-2026) - Foundation:

- Campus-wide LED retrofit completion
- Sustainable transportation program launch
- Waste reduction and recycling infrastructure
- Initial solar PV installation (200 kW)

Phase 2 (2026-2028) - Expansion:

- Building envelope improvements
- Major solar installation (800 kW)
- Fleet electrification implementation
- Green procurement system establishment

Phase 3 (2028-2030) - Transformation:

- Renewable energy procurement program
- Complete fleet electrification
- Carbon offset program implementation
- Smart building systems optimization

8.2 Long-Term Vision

Carbon Neutrality by 2040:

- Comprehensive energy transition plan
- Carbon offset program for unavoidable emissions
- Integration of climate action into university strategic planning
- Regional leadership in higher education sustainability

8.3 Continuous Improvement

- Regular sustainability plan updates based on performance data
- Integration of emerging technologies and best practices
- Stakeholder feedback incorporation and community engagement
- Alignment with evolving global sustainability standards

9. Conclusion

Al-Hadba University's comprehensive approach to sustainability demonstrates institutional commitment to environmental stewardship and climate action. Through systematic measurement, strategic planning, and substantial investment in sustainable infrastructure and operations, the university is creating a model for higher education sustainability in the Middle East region.

The university's science-based carbon reduction targets, combined with innovative programs in energy, transportation, waste, and water management, position Al-Hadba University as a leader in sustainable campus operations. The integration of sustainability into education and research further amplifies the institution's impact, creating graduates equipped to address global sustainability challenges.

With dedicated governance structures, transparent monitoring systems, and strong financial commitments, Al-Hadba University is well-positioned to achieve its ambitious sustainability goals while enhancing educational quality and operational efficiency.

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Next Update: Annual review and progress report 2027