

BUKHARA STATE UNIVERSITY

GREENHOUSE GAS EMISSIONS REPORT (2024)

Prepared in accordance with the GHG Protocol Corporate Accounting and Reporting Standard

1. Executive Summary

This report presents the greenhouse gas (GHG) emissions inventory of Bukhara State University (BSU) for the reporting year 2024. The assessment has been conducted in alignment with the GHG Protocol Corporate Accounting and Reporting Standard to ensure consistency, transparency, and comparability.

The total reported emissions for 2024 amount to **2,247 tCO₂e**, based on available Scope 1, Scope 2, and partial Scope 3 data.

Key findings include:

- Scope 1 emissions (direct fuel use) represent 59% of total emissions
- Scope 2 emissions (electricity) account for 41%
- Scope 3 emissions are currently underreported and require further data collection
- Natural gas consumption is the primary emissions driver

This report establishes a baseline for future emissions reduction strategies and supports institutional sustainability commitments aligned with international frameworks and QS Sustainability Rankings.

2. Institutional Profile

Bukhara State University is a major higher education institution in Uzbekistan with the following operational scale:

- Students: 21,059
- Staff: 1,025
- Total population: 22,084

The university operates multiple academic, administrative, and support facilities, all of which are included within the reporting boundary under the operational control approach.

3. Methodology

3.1 Reporting Standard

This inventory has been developed in accordance with the GHG Protocol Corporate Standard, applying the following principles:

- Relevance
- Completeness
- Consistency
- Transparency
- Accuracy

3.2 Emission Factors

The following emission factors were applied:

- Electricity: 0.55 kg CO₂e/kWh
- Natural gas: 2.0 kg CO₂e/m³
- Vehicle fuel: 2.31 kg CO₂e/litre
- Landfill waste: 0.5 tCO₂e/tonne

3.3 Data Sources

- Utility consumption records
- Institutional operational data
- Waste management estimates

4. Organizational and Operational Boundaries

4.1 Organizational Boundary

The inventory includes all facilities and operations under the university's operational control.

4.2 Operational Boundary

Emissions are categorized as follows:

- Scope 1: Direct emissions from fuel combustion and vehicles
- Scope 2: Indirect emissions from purchased electricity
- Scope 3: Other indirect emissions (currently limited to waste data)

5. Emissions Inventory

5.1 Total Emissions Summary

Scope	Emissions (tCO₂e)
Scope 1	1,323
Scope 2	917
Scope 3	7
Total	2,247

5.2 Scope 1 Emissions

Scope 1 emissions arise from direct fuel consumption.

Source	Activity Data	Emissions (tCO ₂ e)
Natural Gas	638,292 m ³	1,277
Vehicles	20,000 litres	46
Total		1,323

5.3 Scope 2 Emissions

Scope 2 emissions result from purchased electricity.

Source	Consumption	Emissions (tCO ₂ e)
Electricity	1,666,746 kWh	917

5.4 Scope 3 Emissions (Partial)

Scope 3 emissions currently include only waste-related emissions.

Source	Quantity	Emissions (tCO ₂ e)
Landfill Waste	14 tonnes	7
Recycled Waste	21 tonnes	~0
Total	35 tonnes	7

6. Performance Indicators

- Emissions per student: 0.11 tCO₂e
- Emissions per capita: 0.10 tCO₂e

These values are comparatively low due to incomplete Scope 3 reporting.

7. Analysis and Key Findings

The emissions profile indicates a strong dependence on natural gas for heating, which constitutes the largest share of emissions. Electricity consumption is the second-largest contributor.

The current Scope 3 data is significantly limited. In comparable institutions, Scope 3 emissions typically represent the majority of total emissions, particularly due to commuting and procurement activities.

The university demonstrates strong performance in waste management, with a recycling rate of 60%, which significantly reduces emissions from landfill.

8. Limitations and Data Gaps

The following limitations have been identified:

- Absence of commuting data for students and staff
- Lack of business travel records
- No procurement-related emissions data
- Limited waste composition analysis

These gaps indicate that total emissions are likely underestimated.

9. Recommendations

9.1 Data Improvement

- Implement annual sustainability data collection systems
- Conduct commuting surveys
- Integrate procurement tracking with carbon accounting

9.2 Emissions Reduction Measures

- Improve building energy efficiency (insulation, smart systems)
- Introduce renewable energy (solar PV systems)
- Promote sustainable transport options

9.3 Strategic Alignment

- Develop a formal carbon reduction strategy
- Align with national climate policies and SDGs
- Integrate sustainability into institutional planning

10. Conclusion

This report establishes the first structured carbon emissions baseline for Bukhara State University. While current emissions appear low, this is primarily due to incomplete Scope 3 coverage.

The findings provide a critical foundation for future reporting, enabling the university to enhance data accuracy, identify emissions hotspots, and implement targeted reduction strategies.

With improved data collection and strategic planning, the university has the potential to significantly strengthen its sustainability performance and position itself competitively in international rankings such as QS Sustainability Rankings.