

QS Environmental Sustainability Report Section: KazNARU Greenhouse Gas Emissions

Environmental Performance: Greenhouse Gas (GHG) Emissions

Kazakh National Agrarian Research University (KazNARU) reports total annual greenhouse gas emissions of 93,717.58 tCO₂e/year. The emissions profile is overwhelmingly dominated by electricity consumption, which accounts for nearly all institutional carbon output.

Total Emissions Breakdown

| Emission Source | tCO ₂ e/year | Share of Total |
|-----------------|-------------------------|----------------|
| Electricity | 93,711.05 | ~99.99% |
| Shuttle Bus | 1.152 | ~0.001% |
| Cars | 5.376 | ~0.006% |
| Motorcycles | 0 | 0% |
| Total | 93,717.58 | 100% |

Analysis of Emissions Profile

KazNARU's emissions are almost entirely Scope 2-driven, reflecting near-total reliance on externally supplied electricity. This level of concentration is atypical even among energy-intensive institutions and strongly suggests exposure to a carbon-intensive regional grid.

Transport emissions are statistically insignificant (<0.01%), indicating that mobility is already optimized from a carbon perspective and offers limited potential for further reductions relative to energy systems.

This creates a single-point dependency risk: institutional emissions are effectively determined by electricity sourcing and consumption patterns.

Key Findings

- Extreme emissions concentration (>99.9% from electricity) makes energy the decisive lever for decarbonisation
- Negligible transport footprint confirms that non-energy interventions will have marginal impact
- High structural exposure to grid carbon intensity, limiting passive reductions without active intervention
- Strong potential for rapid emissions reduction through targeted, high-impact energy strategies

Strategic Implications (QS Sustainability Alignment)

From a QS Environmental Sustainability perspective, KazNARU demonstrates clear emissions transparency but also a critical dependency on energy transition performance.

To align with leading global practices in climate action and emissions efficiency, the university should prioritise:

- Institutional Net-Zero Roadmap
Establish time-bound decarbonisation targets aligned with international frameworks
- Electricity Decarbonisation Strategy
Accelerate transition to renewable energy procurement (PPAs, on-site solar, green tariffs)
- Deep Energy Efficiency Transformation
Implement high-impact building interventions (retrofitting, insulation, HVAC optimisation, smart metering)
- Carbon Governance and Accountability
Introduce continuous monitoring systems, annual disclosure, and performance benchmarking

Conclusion

KazNARU's emissions profile is highly concentrated, structurally exposed, and strategically clear. While this presents a significant decarbonisation challenge, it also enables focused, high-efficiency intervention.

Meaningful emissions reduction will depend almost entirely on transforming electricity sourcing and consumption, positioning energy transition as the central pillar of the university's sustainability strategy.

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