

MINGACHEVIR STATE UNIVERSITY CLIMATE ACTION PLAN

2025

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INTRODUCTION

Mingachevir State University recognizes climate change as one of the most critical global challenges of the 21st century. In alignment with international frameworks such as the Paris Agreement and the United Nations Sustainable Development Goals, the University is committed to reducing its environmental footprint and contributing to global climate mitigation efforts.

This Climate Action Plan provides a comprehensive framework for measuring, monitoring, and reducing greenhouse gas emissions across university operations. It also outlines strategic actions to enhance climate resilience, improve resource efficiency, and integrate sustainability into academic and operational practices.

The graphic features the Mingachevir State University logo at the top left, with the text 'MINGACHEVIR STATE UNIVERSITY' next to it. Below the logo is the title 'CLIMATE ACTION PLAN' in large, bold, green letters, accompanied by a small green leaf icon. Underneath the title is the subtitle 'Building a Sustainable Future Together'. A paragraph of text follows, stating: 'Mingachevir State University (MSU) recognizes climate change as one of the most critical global challenges of the 21st century. This Plan outlines our commitment to reducing greenhouse gas emissions, enhancing resilience, and integrating sustainability into all aspects of academic and operational practices.' Below this text are five columns, each with an icon and a heading: 1. 'MEASURE' with a CO2 icon, 'Assessing and monitoring GHG emissions across university operations.' 2. 'REDUCE' with a bar chart icon, 'Implementing strategies to reduce emissions and improve resource efficiency.' 3. 'INTEGRATE' with a leaf icon, 'Embedding sustainability in education, research, and campus practices.' 4. 'ENGAGE' with a recycling icon, 'Raising awareness and encouraging participation among students, staff, and stakeholders.' 5. 'GOVERN' with a building icon, 'Strengthening institutional governance for climate-related decision-making.' At the bottom, there are four more columns: 1. 'INNOVATE' with a lightbulb icon, 'Adopting clean and innovative technologies.' 2. 'CONSERVE' with a water drop icon, 'Promoting responsible consumption of energy, water, and materials.' 3. 'TRANSITION' with a tree icon, 'Moving towards a low-carbon and climate-resilient campus.' 4. 'SUSTAIN' with a group of people icon, 'Committed to long-term sustainability for future generations.' The background of the graphic shows a modern university building, wind turbines, solar panels, and a globe.

MINGACHEVIR STATE UNIVERSITY

CLIMATE ACTION PLAN

Building a Sustainable Future Together

Mingachevir State University (MSU) recognizes climate change as one of the most critical global challenges of the 21st century. This Plan outlines our commitment to reducing greenhouse gas emissions, enhancing resilience, and integrating sustainability into all aspects of academic and operational practices.

- MEASURE**
Assessing and monitoring GHG emissions across university operations.
- REDUCE**
Implementing strategies to reduce emissions and improve resource efficiency.
- INTEGRATE**
Embedding sustainability in education, research, and campus practices.
- ENGAGE**
Raising awareness and encouraging participation among students, staff, and stakeholders.
- GOVERN**
Strengthening institutional governance for climate-related decision-making.

- INNOVATE**
Adopting clean and innovative technologies.
- CONSERVE**
Promoting responsible consumption of energy, water, and materials.
- TRANSITION**
Moving towards a low-carbon and climate-resilient campus.
- SUSTAIN**
Committed to long-term sustainability for future generations.



CLIMATE ACTION PLAN

Building a Sustainable Future Together

Mingachevir State University (MSU) recognizes climate change as one of the most critical global challenges of the 21st century. This Plan outlines our commitment to reducing greenhouse gas emissions, enhancing resilience, and integrating sustainability into all aspects of academic and operational practices.



MEASURE

Assessing and monitoring GHG emissions across university operations.



REDUCE

Implementing strategies to reduce emissions and improve resource efficiency.



INTEGRATE

Embedding sustainability in education, research, and campus practices.



ENGAGE

Raising awareness and encouraging participation among students, staff, and stakeholders.



GOVERN

Strengthening institutional governance for climate-related decision-making.



INNOVATE

Adopting clean and innovative technologies.



CONSERVE

Promoting responsible consumption of energy, water, and materials.



TRANSITION

Moving towards a low-carbon and climate-resilient campus.



SUSTAIN

Committed to long-term sustainability for future generations.

The Plan is based on a data-driven approach, incorporating baseline environmental indicators such as energy consumption, campus infrastructure, and transportation activities. MSU aims to transition towards a low-carbon campus model while fostering environmental awareness among students, staff, and stakeholders.

Through this Plan, the University commits to achieving long-term sustainability by adopting innovative technologies, promoting responsible consumption, and strengthening institutional governance in climate-related decision-making.

ORGANIZATIONAL PROFILE

- ✔ **Goal**

Mingachevir State University (MSU) aims to achieve net-zero greenhouse gas emissions (Scope 1 and Scope 2) by 2030 through a structured, data-driven approach aligned with the Net-Zero Emissions Roadmap 2023–2030. Using 2023 as a baseline (136 tCO₂e), the University has already reduced emissions to 98 tCO₂e by 2025 (–27.9%). The Climate Action Plan supports continuous improvement through energy efficiency, renewable energy, and operational optimization.
- ✔ **Mission**

MSU’s mission is to advance sustainable development by integrating climate action into education, research, and campus operations. The University promotes environmental awareness, supports climate-related research, and applies transparent, data-driven emissions management practices.
- ✔ **Vision**

MSU aspires to become a leading low-carbon university, achieving net-zero emissions by 2030 and maintaining a strong sustainability performance. With a low per capita footprint (0.015 tCO₂e), the University aims to serve as a model for environmentally responsible and innovation-driven higher education institutions.




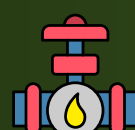

METHODOLOGY

Mingachevir State University (MSU) applies a standardized greenhouse gas (GHG) accounting methodology in accordance with the GHG Protocol Corporate Accounting and Reporting Standard, using an operational control approach to define organizational boundaries. The methodology ensures consistency, transparency, and comparability of emissions data across reporting periods and is fully aligned with the University's Net-Zero Emissions Roadmap 2023–2030.

GHG emissions are quantified using the activity-based calculation approach:

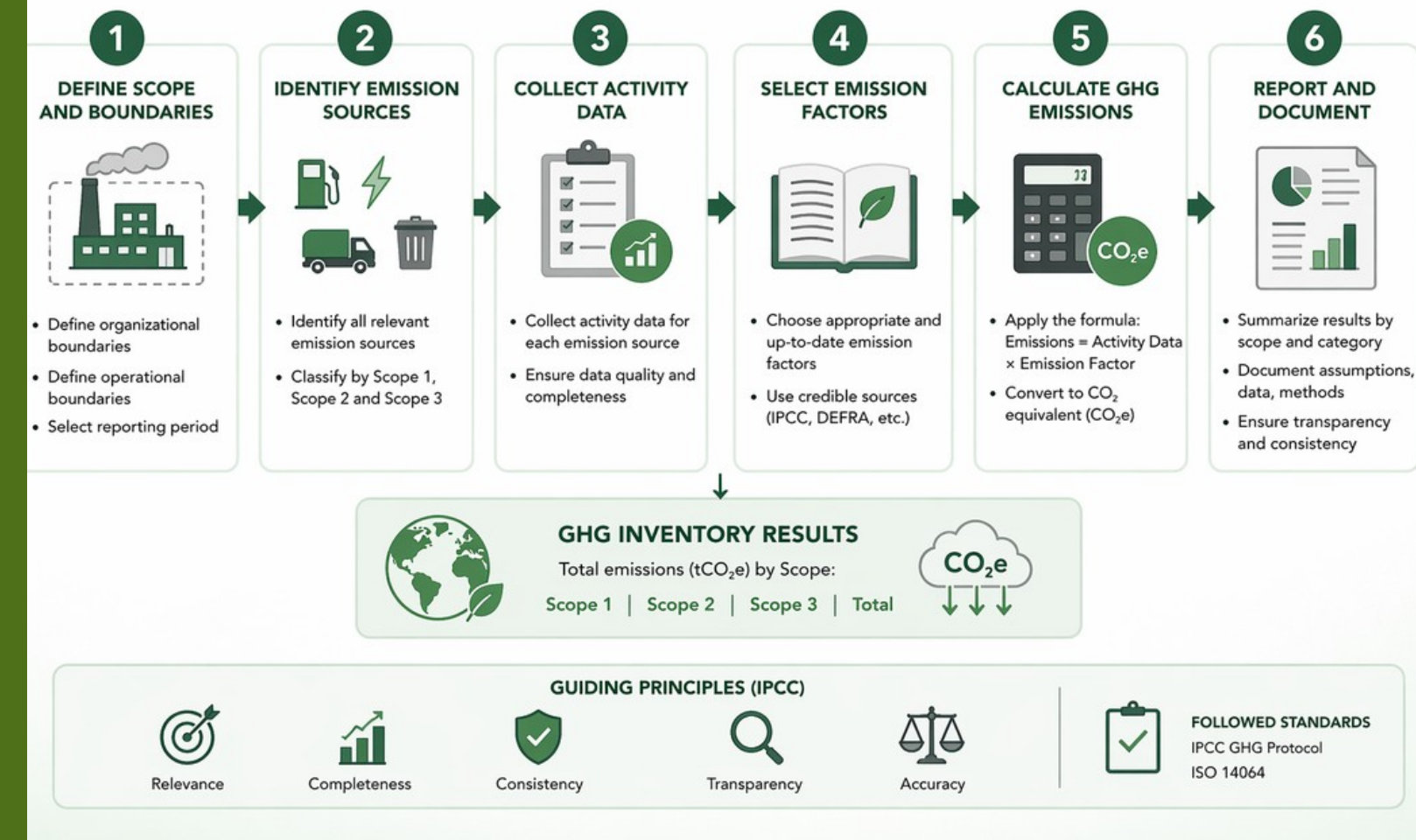
$$\text{GHG emissions (tCO}_2\text{e)} = \text{Activity Data} \times \text{Emission Factor}$$

Activity data is derived from primary institutional records, including:

-  Electricity consumption (kWh) for Scope 2 emissions
-  Natural gas consumption (m³) for heating and energy use (Scope 1)
-  Fuel consumption (liters) for university-owned transport and equipment (Scope 1)

Emission factors are selected from nationally applicable and internationally recognized datasets to ensure methodological robustness and comparability

Methodology for GHG calculation



DATA COLLECTION

Data is systematically collected from utility records, fuel logs, and institutional databases. MSU employs structured digital tools, including **Microsoft Excel-based GHG calculation** models and specialized carbon accounting platforms such as **SIMAP**, to ensure standardized data entry, automated calculations, version control, and audit readiness. These systems enhance data integrity, traceability, and verification capacity.

GHG Inventory and Baseline - MSU maintains an annual GHG inventory covering Scope 1 (direct emissions) and Scope 2 (indirect emissions from purchased electricity) in accordance with mandatory reporting requirements.

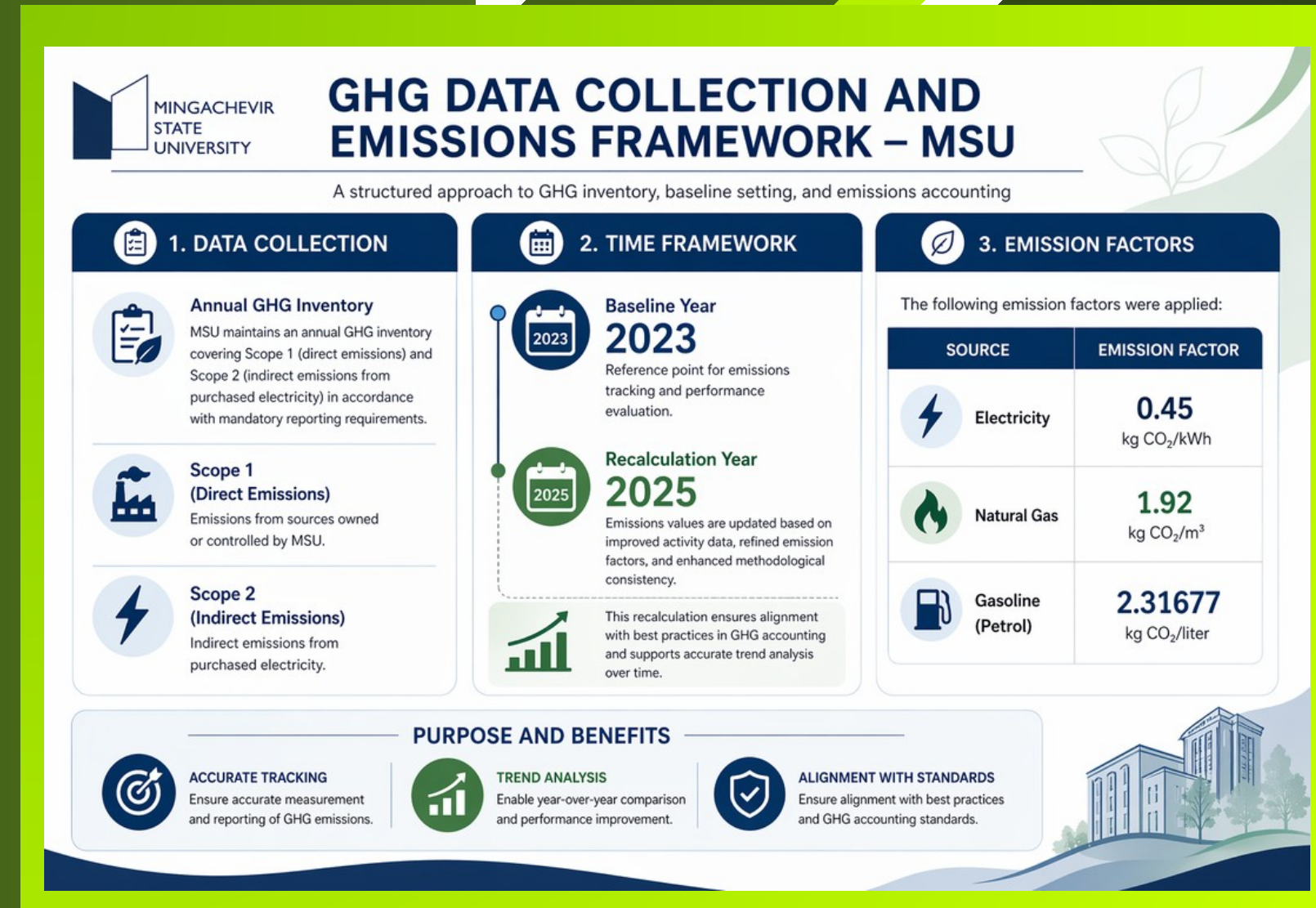
- The baseline year is **2023**, serving as the reference point for emissions tracking and performance evaluation.
- The year **2025** is designated as the **recalculation** year, used to update emissions values based on improved activity data, refined emission factors, and enhanced methodological consistency. This recalculation ensures alignment with best practices in GHG accounting and supports accurate trend analysis over time.

The following emission factors were applied:

Electricity: **0,45 kg CO₂/kWh**

Natural Gas: **1,92 kg CO₂/m³**

Gasoline (Petrol): **2,31677 kg CO₂/liter**



BASELINE EMISSIONS OVERVIEW (BASELINE YEAR: 2023)

SCOPE 1 = Emissions from Natural gas
Combustion + Emissions from Fuel
Combustion
75 tCO₂e

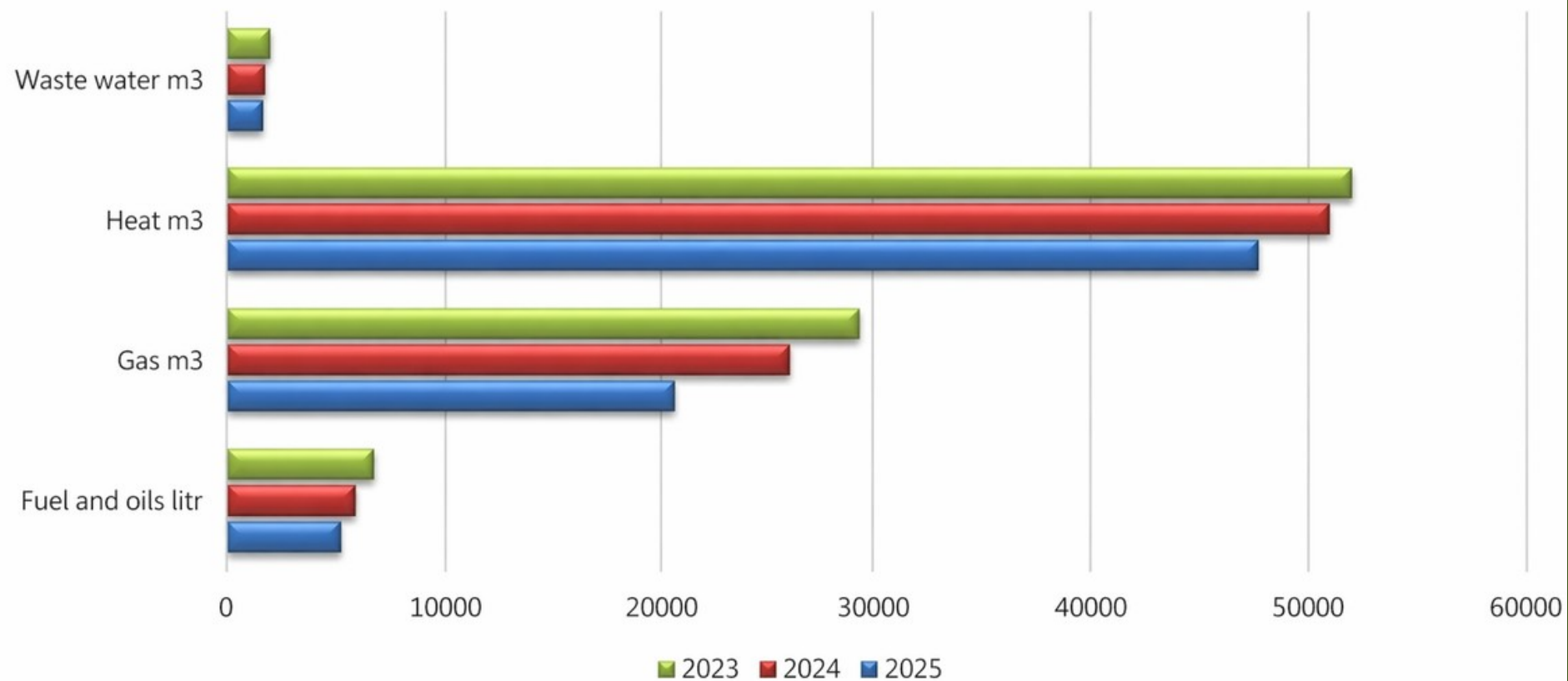
SCOPE 2 = Emissions from Electricity
Combustion
61 tCO₂e



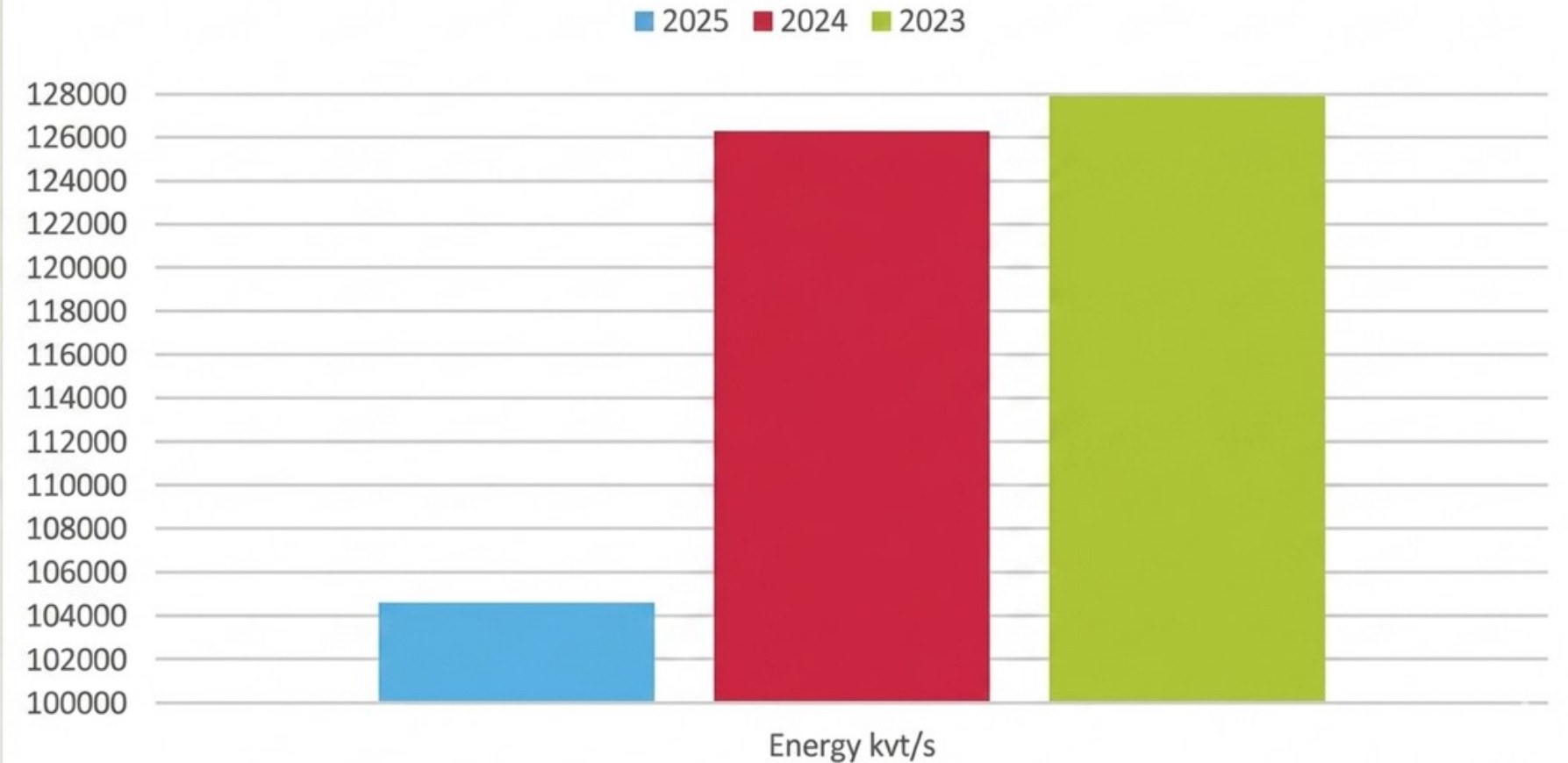
Total Scope Emissions = 75 tCO₂e + 61 tCO₂e = 136 tCO₂e

COMPARATIVE ANALYSIS OF ENERGY CONSUMPTION AND GHG EMISSIONS (2023–2025)

Consumption of harmful effects on the environment from various aspects at Mingachevir State University



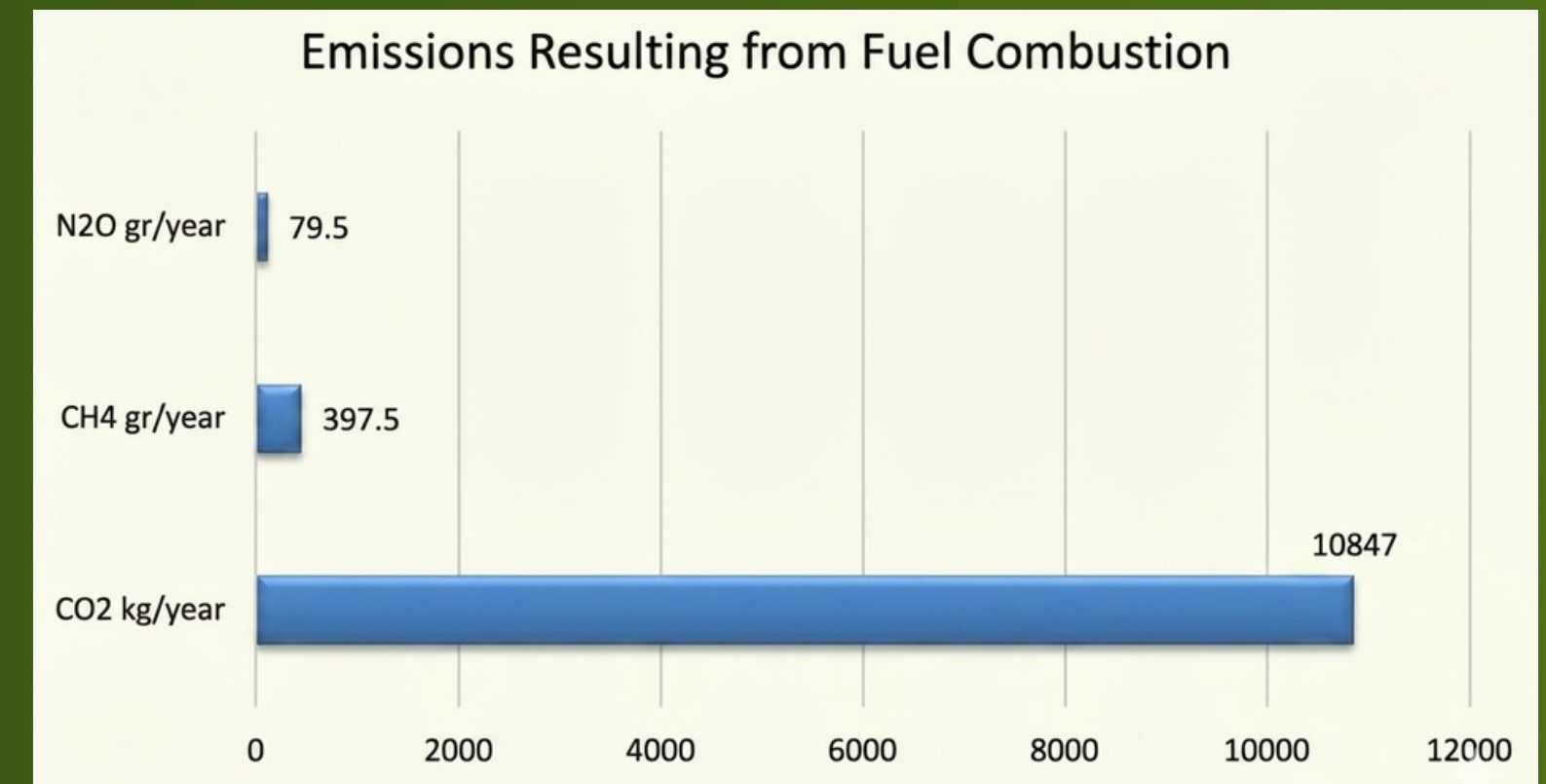
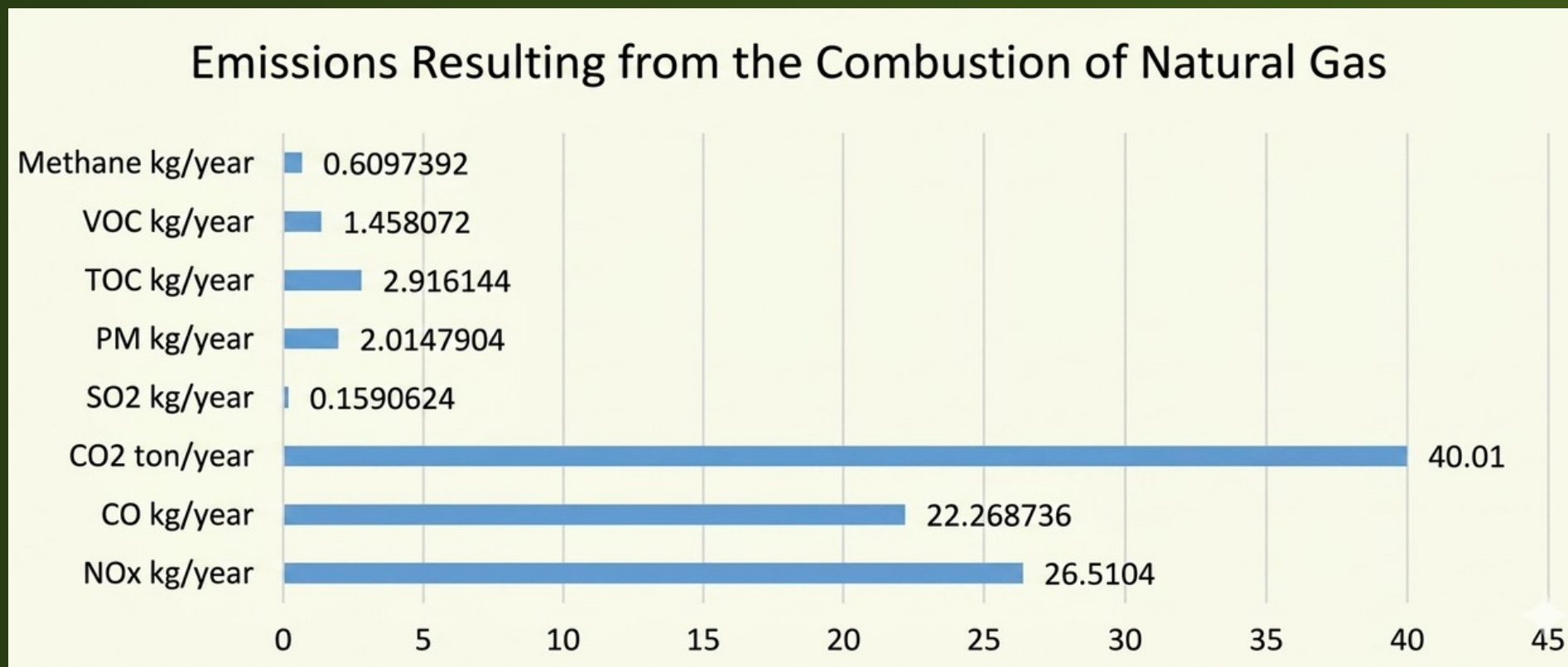
ENERGY CONSUMPTION



EMISSIONS RESULTING FROM THE COMBUSTION OF NATURAL GAS AND FUEL (2025)

Overall Assessment

- CO₂ emissions are clearly dominant across both energy sources, indicating that the university's carbon footprint is primarily driven by energy consumption.
- Natural gas usage generates a higher total emissions load, although fuel consumption also demonstrates noticeable carbon intensity.
- The presence of other gases (NO_x, CO, etc.) highlights the need for improved energy efficiency and technological optimization.



BASELINE EMISSIONS OVERVIEW

(RECALCULATION YEAR: 2025)

Based on the available operational data, the University's emissions profile can be categorized as follows:

✓ Scope 1 (Direct Emissions)

- Natural gas consumption for heating and operations - **20841 m³**
- Total gasoline consumption - **4882 liters.**

**SCOPE 1 = Emissions from Natural gas
Combustion + Emissions from Fuel
Combustion
51 tCO₂e**

Emissions from Natural gas Combustion - $20841 \times 1,92 = 40015 \text{ kg CO}_2 = 40,2 \text{ tCO}_2\text{e}$

Emissions from Fuel Combustion - $4882 \times 2,31677 = 10847 \text{ kg CO}_2 = 10,85 \text{ tCO}_2\text{e}$

Total Scope 1 Emissions = $40,2 + 10,85 = 51 \text{ tCO}_2\text{e}$

✓ Scope 2 (Indirect Emissions)

- Total electricity usage in 2025 was 104453 kWh.










**SCOPE 2 = Emissions from Electricity
Combustion
47 tCO₂e**

Emissions from Electricity Combustion $104453 \times 0,45 = 47004 \text{ kg CO}_2 = 47 \text{ tCO}_2\text{e}$

✓ **Total Scope Emissions = 51 tCO₂e + 47 tCO₂e = 98 tCO₂e**

GHG KPI DASHBOARD – MSU

Tracking Progress Toward Net-Zero by 2030

KPI Area	KPI Indicator	Base Year (2023)	2025 (Recalculation)	2027 Target	2030 Target (Net-Zero)	Unit of Measurement
 GHG Emissions	Total Scope 1 + Scope 2 Emissions	136 tCO ₂ e	98 tCO ₂ e	≤ 60 tCO ₂ e (-55%)	0 tCO ₂ e	tCO ₂ e
 Scope 1 Emissions	Direct Emissions (Gas + Fuell)	75 tCO ₂ e	51 tCO ₂ e	≤ 35 tCO ₂ e	0 tCO ₂ e	tCO ₂ e
 Scope 2 Emissions	Electricity Consumption Emissions	61 tCO ₂ e	47 tCO ₂ e	≤ 25 tCO ₂ e	0 tCO ₂ e	tCO ₂ e
 Emission Reduction Rate	Emission Reduction Percentage (Baseline vs. Current)	0%	-27.9%	-55%	-100%	%
 Energy Consumption	Total Electricity Consumption	128,025 kWh	104,453 kWh	-30% reduction	-60-70% reduction	kWh
 Fuel Consumption (Transport)	Fuel Consumption in University Transportation	≥6000 L	4882 L	-40% reduction	-90-100% reduction	litr
 Electric Vehicle Adoption	Share of EV and Low-Emission Transport	≥5%	≥10%	≥40%	≥90%	%
 Waste Recycling Rate	Recycling Rate (Percentage of Waste Recycled)	≥ 10%	≥20%	≥60%	≥90%	%
 Energy Efficiency Improvement	Transition to LED / Smart Systems	≥ 20%	≥ 50%	≥70% binalar	100%	%
 Per Capita Emissions	Emissions per Capita	0.021 tCO ₂ e	0.015 tCO ₂ e	≤ 0.010	~0	tCO ₂ e/person
 Monitoring Coverage	GHG Data Coverage	Scope 1-2	Scope 1-2	+ Scope 3 pilot	Full Scope 1-3	%
 Carbon Reporting	Annual GHG Report Presentation	Available	Available	Improved MRV	Audit-ready System	Binary



OUR GOAL
Achieve Net-Zero Emissions by 2030



OUR APPROACH
Measure. Reduce. Transform.



OUR COMMITMENT
Data-driven decisions for a sustainable future.



Together for a Greener MSU
Today's Action, Tomorrow's Legacy.



OUR ACTIONS IN CLIMATE CHANGE SOLUTIONS FOR OUR CAMPUS AND BUILDINGS:

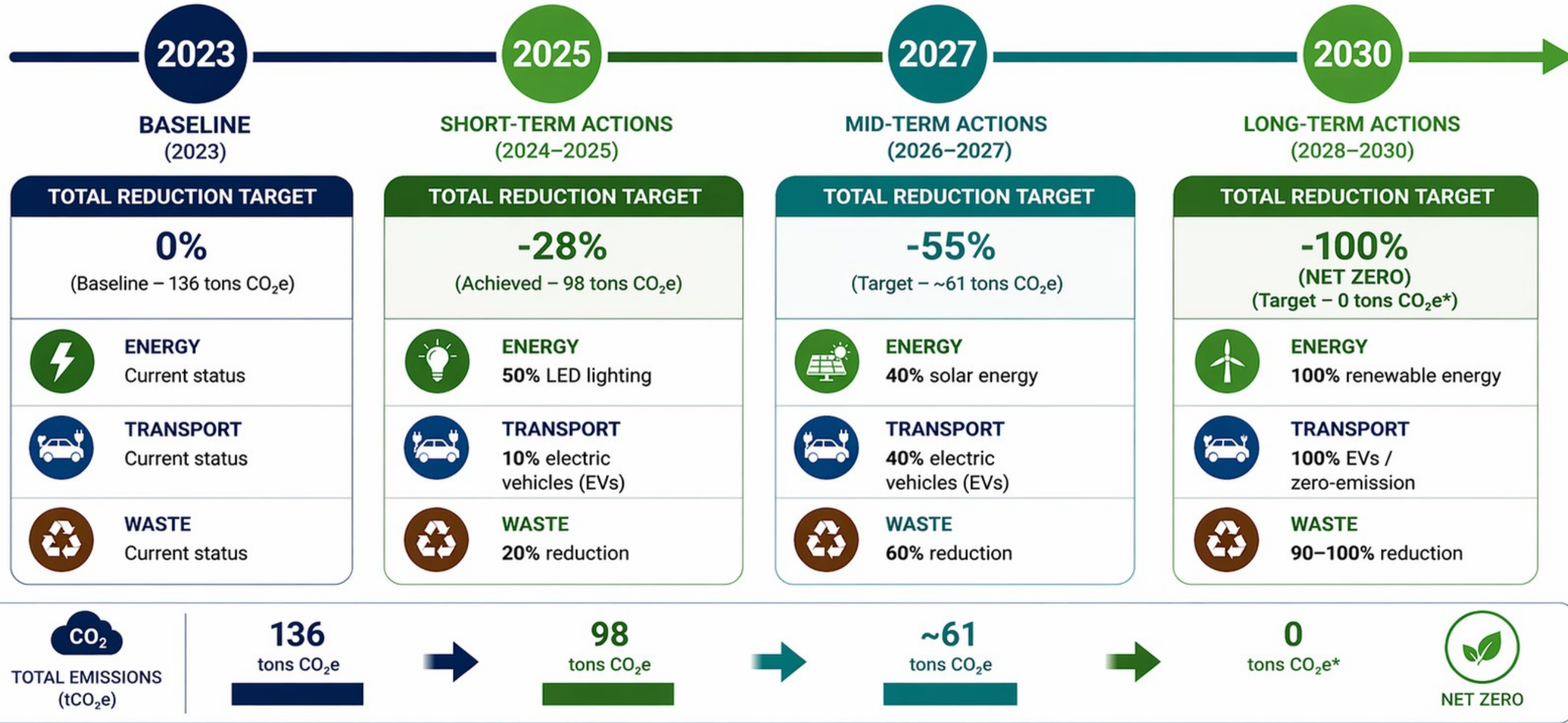
MSU take climate action in four different areas

- ✓ Energy
- ✓ Transport
- ✓ Waste
- ✓ Green Lanes.



MSU NET ZERO ROADMAP TO 2030

From Baseline to Net Zero: Our Path to a Sustainable Future



Net zero will be achieved through maximum emission reductions and offsetting of any residual emissions.
 *Remaining unavoidable emissions will be neutralized through verified carbon offset projects.

GOVERNANCE FRAMEWORK – MSU

Clear Responsibilities. Measurable Actions. Net Zero by 2030.



GOVERNANCE	RESPONSIBILITIES	REAL ACTIONS
 Rectorate and Strategic Development	<ul style="list-style-type: none"> Approval and oversight of the Climate Action Plan and Net Zero 2030 Strategy Allocation of budget, investments, and resources in line with sustainability priorities Ensuring alignment with international frameworks (Paris Agreement, SDGs) 	<ul style="list-style-type: none"> Approval of an annual minimum 20% reduction trajectory in GHG emissions Allocation of at least 18% of the budget to energy and sustainability projects Ensuring 100% compliance of all new projects with low-carbon standards by 2030
 Sustainability Committee	<ul style="list-style-type: none"> Coordination of climate actions across all departments Monitoring and evaluation of KPI implementation Preparation of reports on climate risk and performance 	<ul style="list-style-type: none"> Quarterly monitoring of KPI implementation with at least ≥90% compliance level Development of a corrective action plan within a maximum of 6 months in case of KPI deviations Ensuring 100% KPI coverage in the annual report presentation
 Quality Assurance and Accreditation Office	<ul style="list-style-type: none"> Verification of the Climate Action Plan's compliance with international standards Audit and evaluation of KPIs and performance indicators Ensuring compliance with international ranking frameworks 	<ul style="list-style-type: none"> 100% annual KPI audit coverage Compliance with a minimum 4+ star rating level in international rankings Ensuring 100% audit-ready status of the MRV system
 Environmental Sustainability and Climate Action Center	<ul style="list-style-type: none"> Preparation of the GHG inventory and ensuring methodological compliance Development of technical solutions for emission reduction Management of research and innovation activities 	<ul style="list-style-type: none"> Calculation of Scope 1 and Scope 2 emissions with 100% accuracy (±5% error margin) Implementation of a pilot Scope 3 emissions accounting system by 2027 (≥50% coverage) Introduction of at least two emission-reduction technologies annually (e.g., solar energy, efficiency improvements)
 Facilities Department	<ul style="list-style-type: none"> Management of energy consumption and building performance Implementation of energy efficiency projects Ensuring climate resilience of infrastructure 	<ul style="list-style-type: none"> Implementation of LED and smart lighting systems in at least 70% of buildings by 2027 Annual reduction of energy consumption by a minimum of 10% Transition to 100% renewable energy sources by 2030 By 2030, at least 300 new trees will be planted within the campus area. Installation of Electric Vehicle charging stations
 Digital Development and IT Department	<ul style="list-style-type: none"> Digitalization of GHG data collection and MRV systems Ensuring data accuracy and audit-ready systems Implementation of smart campus technologies 	<ul style="list-style-type: none"> Implementation of a 100% real-time energy monitoring system by 2026 Establishment of an audit-ready MRV system for GHG data with 100% traceability Reduction of data entry errors to ≤2% level
 Department of Natural Sciences	<ul style="list-style-type: none"> Development of education and research in climate change and sustainability Support for evidence-based decision-making Engagement of students in climate action initiatives 	<ul style="list-style-type: none"> At least 5 climate-related research projects conducted annually Engagement of at least 30% of students in climate and sustainability activities Publication of a minimum of 2 scientific papers per year on climate-related topics



Our Commitment: Through clear governance, accountability, and real actions, MSU will achieve Net Zero emissions by 2030 and build a sustainable future for generations to come.



Paris Agreement
Alignment



SDGs
Contribution



Data-Driven
Decisions



Transparency &
Accountability

Conclusion

Climate Action Plan provides a structured and realistic roadmap for transforming the university into a sustainable, low-carbon and climate-resilient campus by 2030. The plan is built around four core action areas—**Energy, Transport, Waste, and Green Infrastructure**—supported by a strong governance system and a data-driven monitoring framework.

The proposed measures focus on reducing greenhouse gas emissions through improved energy efficiency, gradual integration of renewable energy sources, promotion of sustainable mobility, and the implementation of effective waste management practices. In parallel, the expansion of green areas and ecological initiatives such as tree planting and campus greening contribute to enhancing environmental quality and resilience.

A key strength of the plan is the establishment of a robust MRV (Monitoring, Reporting, and Verification) system, which ensures transparency, accuracy of data, and continuous performance tracking. This enables evidence-based decision-making and supports the effective implementation of climate actions across all university units.

The governance model ensures clear distribution of responsibilities between strategic leadership, academic units, technical departments, and operational teams, fostering coordinated and accountable implementation.

Overall, this plan positions the university on a clear pathway toward long-term climate responsibility, fostering a culture of sustainability, innovation, and environmental stewardship across the campus community.

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