2021

Boğaziçi University Greenhouse Gas Inventory Report

ISO 14064-1 Corporate Greenhouse Gas Inventory Report

BOĞAZİÇİ UNIVERSITY

Reporting Period: January 2025 – December 2025
Reporting Date: 08/04/2026

Prepared in accordance with the ISO 14064-1:2018 Standard.

azalt
ESG Software

Terms

CH4: Methane

CO2: Carbon Dioxide

CO2e: Carbon Dioxide Equivalent

EF: Emission Factor

GHG: Greenhouse Gas

HFCs: Hydrofluorocarbons

N2O: Nitrous Oxide

PFCs: Perfluorocarbons

SF6: Sulphur Hexafluoride

NF3: Nitrogen trifluoride

Emissions Reduction: The elimination, reduction or prevention of greenhouse gas emissions.

Emission Factor or Coefficient: A coefficient used to convert the impact of an activity or the production or use of a product into CO2e units. Emission factors are generally expressed as "tonnes of CO2e per unit of activity".

Carbon Footprint: The total of all greenhouse gas emissions caused by an individual, organisation, event or product over a specific period of time, usually measured in carbon dioxide equivalents (CO2e).

Carbon Footprint Offsetting: Carbon offsetting is a process involving the reduction or removal of carbon dioxide or other greenhouse gas emissions from the atmosphere, with the aim of offsetting emissions generated elsewhere.

Carbon Dioxide Equivalent (CO_2e): A metric used to compare emissions of various greenhouse gases based on their global warming potential (GWP), expressed as the amount of CO_2 required to produce an equivalent warming effect.

Summary

This report is the Organisation's Greenhouse Gas Emissions Inventory Report and covers the period from January 2025 to December 2025. Throughout this document, the term 'emissions' refers to greenhouse gas emissions. During the reporting period, the Organisation's carbon footprint was calculated as 14,664.76 metric tonnes of CO_2-equivalent[1] . The primary source of the Organisation's emissions is electricity consumption, accounting for 45.61% of total emissions. Other significant emission sources for the Organisation include natural gas consumption and electricity consumption. Table 1 below shows the distribution of emission sources.

Table 1. Emission Sources and Distribution

Emission Source	Distribution (%)
Natural Gas Consumption	34.73
Stationary and Mobile Combustion	3.57
Electricity Consumption	45.61
Scope 3 (Value Chain)	16.09
Total	100

This report provides a detailed explanation of emission sources and the methods used to calculate the carbon footprint. Compliance with international protocols and standards has been ensured throughout the reporting processes and emission classifications. The calculation and reporting of emissions are based on the ISO 14064-1 Standard and follow the Greenhouse Gas Protocol: Corporate Accounting and Reporting Standard (the basis for ISO 14064-1). This report demonstrates the Organisation's commitment to transparency and accountability in measuring and reducing greenhouse gas emissions[2] . This report demonstrates the Organisation's commitment to transparency and accountability in measuring and reducing greenhouse gas emissions.

The Organisation's total greenhouse gas emissions for the period January 2025 – December 2025 amount to **14,664.76** tonnes of CO_2e. The total carbon footprint generated by the Organisation during the reporting period is detailed in Table 2 and Table 3, respectively, based on the scopes of the Greenhouse Gas Protocol[3] and the categories of ISO 14064-1.

[1] Carbon dioxide equivalent, or CO_2 equivalent—abbreviated as CO_2-eq—is a metric used to compare emissions of various greenhouse gases based on their global warming potential (GWP). This is achieved by converting the quantities of other gases into the equivalent amount of carbon dioxide that would have the same global warming potential.

[2] World Resources Institute (WRI) – Greenhouse Gas Protocol

[3] The Greenhouse Gas Protocol categorises corporate emissions into three categories: Scope 1 (direct emissions), Scope 2 (indirect emissions), and Scope 3 (supply chain emissions).

Table 2. Carbon Footprint Distribution by Scope

Reporting Period	01/01/25 - 31/12/25
Scope 1 Direct Emissions (tCO_2e)	5,615.90
Scope 2 Indirect Emissions (tCO_2e)	6,688.69
Scope 3 Value Chain Emissions (tCO_2e)	2,360.17
Total Emissions (tCO_2e)	14,664.76

Table 3. Carbon Footprint Distribution by Category

Reporting Period	01/01/25 – 31/12/25
Category 1 Direct Emissions (tCO_2e)	5,615.90
Category 2 Emissions from Purchased Energy (tCO_2e)	6,688.69
Category 3 Indirect Emissions from Transport (tCO_2e)	1,129.45
Category 4 Indirect Emissions from Products/Services Used (tCO_2e)	613.95
Indirect Emissions Associated with the Use of Category 5 Products (tCO_2e)	616.77
Category 6 Other Indirect Emissions (tCO_2e)	0
Total Emissions (tCO_2e)	14,664.76

Introduction

Climate change is one of the most critical issues of our time. The use of fossil fuels, deforestation and other human-induced activities have led to a significant increase in greenhouse gas emissions over the last century. This has triggered global warming, resulting in an increase in extreme weather events, rising sea levels and the disruption of natural balances.

In the fight against this crisis, many organisations are taking significant steps to reduce greenhouse gas emissions and promote sustainability. Organisations are tackling climate change through various methods, such as balancing electricity consumption by obtaining renewable energy certificates, upgrading lighting systems with more energy-efficient technologies, investing in carbon offset projects, and encouraging staff to reduce energy consumption.

The ISO 14064-1 standard provides an international guideline for organisations' greenhouse gas emissions reporting and verification processes. This standard enables organisations to produce reliable and transparent reports on their emissions calculation and management processes. Organisations adopting ISO 14064-1 reinforce their sustainability commitments and the accuracy and reliability of their emissions data. Furthermore, organisations compliant with this standard can set emissions reduction targets and utilise national or international emissions trading schemes to achieve these targets.

Organisation Name	Boğaziçi University
Country	Turkey

1. About the Report

1.1. Reporting Objectives

Organisations are placing increasing importance on assessing and managing climate impacts for reasons such as aligning with national and international climate policies, establishing effective communication with customers and employees, gaining a competitive advantage in the market, and reducing business risks. Failure to accurately calculate and manage greenhouse gas emissions may lead to legal and financial penalties in the future; it may negatively impact an organisation's reputation and financial position. This situation may result in reduced access to suitable financing, carbon taxes and fines, and job losses.

This report has been prepared for Boğaziçi University (the Institution) in line with the following objectives:

- To measure the Institution's greenhouse gas emissions comprehensively and accurately, and to calculate the environmental impact of its activities,
- To demonstrate the Institution's commitment to sustainability by complying with international greenhouse gas reporting standards,
- To identify areas with high emission intensity and those requiring improvement, and to provide data to assist in setting the Institution's emission reduction targets,
- To assist the Organisation in achieving early compliance with potential national and international regulations and mandatory reporting requirements regarding greenhouse gas emissions,
- To raise awareness among the Organisation's staff regarding climate change mitigation, energy efficiency and environmental sustainability,
- To monitor the Organisation's sustainability performance and strengthen communication with stakeholders.

This study is expected to provide the Organisation with the following benefits.

1.1.1. Internal Benefits

- To ensure transparency regarding the organisation's carbon footprint, emission sources and energy consumption,
- Identifying areas with high emission intensity and sectors where the Organisation can reduce its emissions, and improving its environmental performance,
- Setting realistic emission reduction targets and making decisions regarding investment in emission reduction technologies,
- To establish the foundation for a greenhouse gas management plan for the Organisation,

- To raise awareness within the organisation and strengthen the organisation's sustainability vision.

1.1.2. External Benefits

- By carrying out emissions calculation and reporting in accordance with ISO 14064, the Organisation demonstrates its commitment to transparency and environmental responsibility. This can enhance the Organisation's reputation and credibility in the eyes of its customers, investors and other stakeholders.
- By providing accurate and reliable emissions data, the Organisation can communicate with its stakeholders and play an active role in the fight against climate change.

1.2. Scope of the Report

The ISO 14064-1 Standard classifies an organisation's greenhouse gas emissions into six different categories.

Category 1: Direct Emissions

This category covers emissions arising from sources directly owned or controlled by the organisation:

- Emissions resulting from the fuel consumption of vehicles owned by the organisation,
- Emissions resulting from the combustion of fossil fuels such as natural gas used for heating,
- Emissions from diesel generators,
- Emissions from heavy machinery (e.g. forklifts) used off-site and typically powered by petrol or diesel,
- Emissions resulting from gases released into the atmosphere during the maintenance and use of equipment such as fire extinguishers and industrial gas cylinders,
- Emissions released into the atmosphere through refrigerant gas leaks during the maintenance of air conditioning systems, etc.

Category 2: Emissions from Imported Energy Sources

This category includes emissions resulting from the organisation's consumption of purchased electricity, steam, heat or cooling:

- Emissions resulting from the organisation's electricity consumption drawn from the grid for its operations,
- Emissions resulting from steam, heat or cooling systems used in industrial processes or building heating/cooling systems.

Category 3: Indirect Emissions from Transport

This category includes emissions resulting from the organisation's activities that originate from sources not owned or controlled by the organisation:

- Emissions from business travel,
- Emissions from purchased energy,
- Emissions from employees' commutes to and from work, etc.

Category 4: Indirect Emissions from Products/Services Used

This category arises from sources associated with goods used by the organisation but located outside its boundaries. These sources may be fixed or mobile and are linked to all goods purchased by the reporting organisation. Emissions predominantly arise from the following stages:

- Emissions resulting from the extraction of natural resources (e.g., mining, forestry) and agricultural activities,
- Emissions generated during the production processes of products, raw materials and fixed assets purchased by the organisation,
- Emissions resulting from the transport and disposal of operational waste, etc.

Category 5: Indirect Emissions Associated with the Use of Products

This category covers emissions arising from the use of goods and services sold by the organisation:

- Emissions from leased assets,
- Emissions arising from the end-of-life stage of the product,
- Emissions from investments, etc.

Category 6: Other Indirect Emissions

The purpose of this category is to document organisation-specific emissions (or removals) that cannot be reported under any other category. It is therefore the organisation's responsibility to define the content of this specific category. Organisations should make effective use of this category to classify and report emissions or removals specific to their own activities in a comprehensive and transparent manner. This approach helps to address gaps in the reporting process and enhance transparency in emissions management.

This report details the organisation's greenhouse gas emissions for the period January 2025 to December 2025 within the framework of Categories 1, 2, 3, 4 and 5. This report has been prepared in accordance with the ISO 14064-1:2018 standard for the calculation and reporting of greenhouse gas emissions.

1.3. Reporting in accordance with ISO 14064-1

ISO 14064-1 is a standard that provides rules and guidelines for the creation, management and reporting of corporate greenhouse gas inventories. This standard provides guidelines for limiting greenhouse gas emissions and covers various topics such as the calculation, reduction and management of corporate greenhouse gas emissions. It also specifies the steps required for organisations to analyse, report, collect, verify and interpret their greenhouse gas inventories. The ISO 14064 series of standards provides international guidance to organisations for reporting and verifying greenhouse gas emissions. This series consists of three parts:

ISO 14064-1: Standard Specifying Requirements and Guidelines for the Calculation and Reporting of Greenhouse Gas Emissions and Removals at the Organisation Level. This part provides the general principles and requirements for an organisation to measure, report and verify its greenhouse gas emissions.

ISO 14064-2: Standard Specifying Requirements and Guidelines for the Calculation, Monitoring and Reporting of Greenhouse Gas Emission Reductions or Removal Enhancements at the Project Level. This part provides guidance on the measurement, monitoring and reporting of greenhouse gas emission reductions or removals arising from a project.

ISO 14064-3: Standard Specifying Requirements and Guidelines for the Verification and Validation of Greenhouse Gas Statements. This section provides guidance on the verification and validation of greenhouse gas data, and includes the principles, requirements and guidelines necessary for the verification and validation of greenhouse gas statements. The qualifications of verifiers and validators are also specified in this section.

Reporting greenhouse gas emissions in accordance with the ISO 14064 standard offers numerous benefits for organisations:

- **Compliance with regulations:** Compliance with ISO 14064 helps organisations meet national and international regulations and mandatory reporting requirements.
- **Transparency and reliability:** Reporting in accordance with ISO 14064 demonstrates the organisation’s commitment to transparency and environmental responsibility, thereby enhancing its reputation and credibility among customers, investors and other stakeholders.
- **Identifying areas for improvement:** By calculating and reporting emissions, organisations can identify areas where they can reduce emissions and improve their environmental performance, thereby reducing costs and achieving savings.
- **Setting emission reduction targets:** By complying with ISO 14064, organisations can set emission reduction targets to achieve sustainability goals and comply with future regulations, and develop strategies to meet these targets.
- **Compliance with international standards:** ISO 14064 is an internationally recognised standard that provides a framework for organisations to measure and report

their emissions in a transparent and consistent manner. This ensures that data is understandable and comparable across different organisations.

- **Improving efficiency and reducing costs:** Organisations can improve their efficiency by identifying and reducing emissions, thereby lowering costs associated with energy consumption and waste management.

The ISO 14064-1 standard specifies the principles to be followed in the calculation and reporting of greenhouse gas emissions. These principles are designed to ensure that emissions are determined accurately and reliably. These principles are explained in detail below.

1. Suitability: Greenhouse gas sources, emission data and calculation methodologies must be appropriate to the organisation's objectives. This means that the selected methods and data must be consistent with the organisation's greenhouse gas management targets.

2. Completeness: Emission data must cover all relevant sources and activities within the organisation. This implies that the emissions inventory must fully reflect all areas and activities of the organisation.

3. Consistency: The annual emissions inventory must be compiled consistently, using the same methods and data sources as far as possible. This is important to ensure the reliability of year-on-year comparisons and to avoid errors arising from methodological differences.

4. Accuracy: Emissions data, as well as the methods and assumptions used in calculating emissions, must be appropriate to the required level of precision. The greenhouse gas inventory must not deviate significantly from actual values, and systematic errors must be minimised as far as possible.

5. Transparency: Emission data must be presented transparently, and all methodologies and assumptions used in the calculation of emissions must be clearly and comprehensibly stated.

Table 4. Responsible Persons

First Name Surname	Email
Vehbi Meşin	vehbi.mesin@bogazici.edu.tr

1.4. Base Year

The reference year is defined as the year selected by an organisation to measure and compare greenhouse gas (GHG) emissions over time in accordance with the ISO 14064 standard. This year serves as a reference point against which reductions or increases in emissions are assessed in subsequent reporting periods and enables the monitoring of progress towards GHG reduction

targets. For the organisation, 2025 has been designated as the base year. This allows measurements taken in subsequent years to be compared with the data from 2025, thereby enabling changes in emissions to be accurately identified.

2. Methodology

2.1. Scope of the Greenhouse Gas Inventory

2.1.1. Organisational Boundaries

In the ISO 14064-1 greenhouse gas (GHG) reporting process, defining organisational boundaries—which encompass the identification of the organisation's direct and indirect emissions—is a fundamental step. This decision must be consistent with the inventory's objectives, the organisation's overall goals, and data availability. The boundaries must be clearly defined in the inventory report to ensure transparency. In the context of ISO 14064-1 greenhouse gas measurement and reporting, organisational boundaries can be defined using two different approaches:

- Control approach: This approach includes all emissions arising from sources owned by or under the control of the organisation. The organisation accounts for all greenhouse gas emissions and/or reductions arising from facilities under its financial or operational control.
- Equity-based approach: This approach is used where an organisation carries out activities jointly with another organisation or jointly owns a source. Emissions are included in the calculations in proportion to the organisation's ownership or control. The organisation accounts for its share of the greenhouse gas emissions and/or reductions arising from the relevant activities.

The organisation has defined its organisational boundaries for the period 01/01/25 – 31/12/25 based on the operational control approach.

Table 5. Organisational Boundaries

Site	Institution Address
Boğaziçi University	34342 Bebek, Istanbul (South Campus)

2.1.2. Reporting Boundaries

The institution has identified greenhouse gas emissions associated with its activities, established its operational boundaries, and documented this information. The greenhouse gas emissions inventory included in this report covers the following categories:

- **Category 1**
- **Category 2**
- **Category 3**

- **Category 4**
- **Category 5**
- **Category 6**

In the following sections, you can find more detailed information about the Organisation's environmental impacts and emissions profile.

- **Biogenic Emissions**

During the reporting period, there were no biogenic (biogenic CO_2) emissions arising from the Organisation's operations.

- **Greenhouse Gas Reduction and Prevention**

No activities related to the reduction or prevention of greenhouse gases were carried out during the reporting period.

2.1.3. Uncertainty Analysis

The process of estimating uncertainties in the Institution's greenhouse gas emissions inventory encompasses two main types of uncertainty. This calculation involves the joint assessment of (1) uncertainties in the activity data for each emission source and (2) uncertainties in emission factors, and assists in calculating total uncertainties.

For uncertainty calculations, methodologies recommended by the IPCC and calculation tables developed by the GHG Protocol were used.

For the period 1/2025 – 12/2025, the Organisation's total uncertainties have been calculated in accordance with an acceptable confidence level. This process is based on standards and methods that are continuously updated with the aim of developing more reliable data collection methods and reducing uncertainty levels. Uncertainty calculations were carried out based on the methodological approach defined in the IPCC (2006) Guidelines and the GHG Protocol Uncertainty Calculation Tool. The combined uncertainty for each emission source was calculated using the RSS method: $U_{(combined)} = \sqrt{(U_{AD}^2 + U_{EF}^2)}$.

2.1.4. Greenhouse Gas Inventory Quality Management System

This report has been prepared in accordance with the principles of the ISO 14064-1 standards and has been addressed within the framework of the greenhouse gas management system. The report has also been structured to comply with the "Greenhouse Gas Information Management Procedure" and the "Greenhouse Gas Inventory Calculation Procedure". These procedures aim to enhance the accuracy and reliability of the greenhouse gas inventory and provide a systematic approach.

2.1.5. Greenhouse Gas Inventory Verification

The "Greenhouse Gas Inventory Report", covering direct and indirect greenhouse gas emissions arising from activities between 1 January 2025 and 31 December 2025, is verified by independent auditors.

2.2. Greenhouse Gas Emission Calculation Methodology

2.2.1 Identification of Greenhouse Gas Sources and Sinks

ISO 14064 stipulates that all sources and sinks of greenhouse gas emissions within an organisation's boundaries must be identified. This includes sources that generate direct emissions, such as the combustion of fossil fuels in boilers or vehicles, and sources of indirect emissions, such as imported electricity. The organisation's greenhouse gas sources and sinks have been defined in accordance with all activities within the organisation's boundaries and the reporting scope of this study.

2.2.2 Selection of the Calculation Methodology

As the organisation does not directly measure greenhouse gas emissions, a specific 'calculation methodology' has been followed for emission calculations. The organisation's carbon footprint is calculated by multiplying activity data by greenhouse gas emission or removal factors. The formula used for the calculations is presented below as an equation.

2.2.3 Data Used for Measuring Greenhouse Gas Emissions and Data Collection

Once data relating to activities defined within the organisation's greenhouse gas boundaries has been collected from the field, it is consolidated using the Azalt: ESG Software, which enables continuous data entry by team members responsible for greenhouse gas management. The accuracy and consistency of the collected data must be maintained at the highest level by verifying it against tangible evidence such as invoices and meter readings. Furthermore, activity data is recorded within the controlled web-based environment of the Azalt: ESG Software.

2.2.4 Selection and Development of Greenhouse Gas Emission or Removal Factors

The selection of greenhouse gas emission or removal factors is guided by data derived from the DEFRA GHG Conversion Factors, the IPCC Sixth Assessment Report and the World Resources Institute's Greenhouse Gas Protocol for the 1/2025 – 12/2025 reporting period.

2.2.5 Calculation of Greenhouse Gas Emissions and Removals

All data has been calculated using the web-based Azalt: ESG Software. The organisation calculates greenhouse gas emissions and removals in tCO2e by following the specified calculation approach. This is achieved by multiplying activity data for each emission source by the relevant GHG emission factors, thereby determining the organisation's carbon footprint.

Except in special cases, the following general equation has been used to calculate greenhouse gas (GHG) emissions arising from a typical activity:

$$\textit{Total Greenhouse Gas Emissions } (tCO_2e) = \Sigma \textit{ Total consumption (e.g., kg)} \times \textit{Emission factor (e.g., kg } CO_2e/kg)$$

3. Greenhouse Gas Emissions Inventory

3.1. Emission Breakdown by Scope

Table 6. Emission Distribution by Scope

Emissions (tCO_2e)	CO_2	CH_4	N_2O	Total Emissions (tCO_2e)
Scope 1	5,313.65	1.27	3.85	5,615.90
Scope 1 (Biological Origin)	0	0	0	0
Scope 2	6,688.69	0	0	6,688.69
Scope 3	2,360.17	0	0	2,360.17
Total	**14,362.51**	**1.27**	**3.85**	**14,664.76**

Figure 1 shows the organisation's total carbon footprint by scope. The most significant portion of the Organisation's carbon footprint stems from Scope 2 (electricity consumption) emissions, accounting for 45.61% of the Organisation's carbon footprint; for the reporting period 1/2025 – 12/2025, this amounts to 6,688.69 tCO_2e. Scope 1 emissions (direct emissions) account for 38.29% of the organisation's carbon footprint, amounting to 5,615.90 tCO_2e. Scope 3 emissions, meanwhile, account for 16.09% of the organisation's carbon footprint, amounting to 2,360.17 tCO_2e. Figure 2 illustrates the greenhouse gas emissions resulting from the activities carried out by the Organisation within its organisational and reporting boundaries during the reporting period.

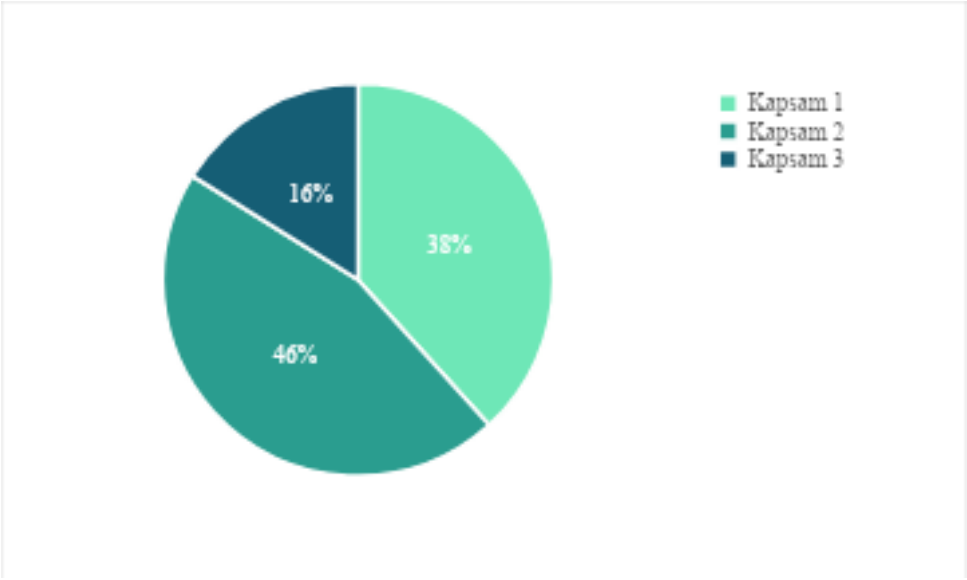

Figure 1. Greenhouse Gas Emissions by Scope

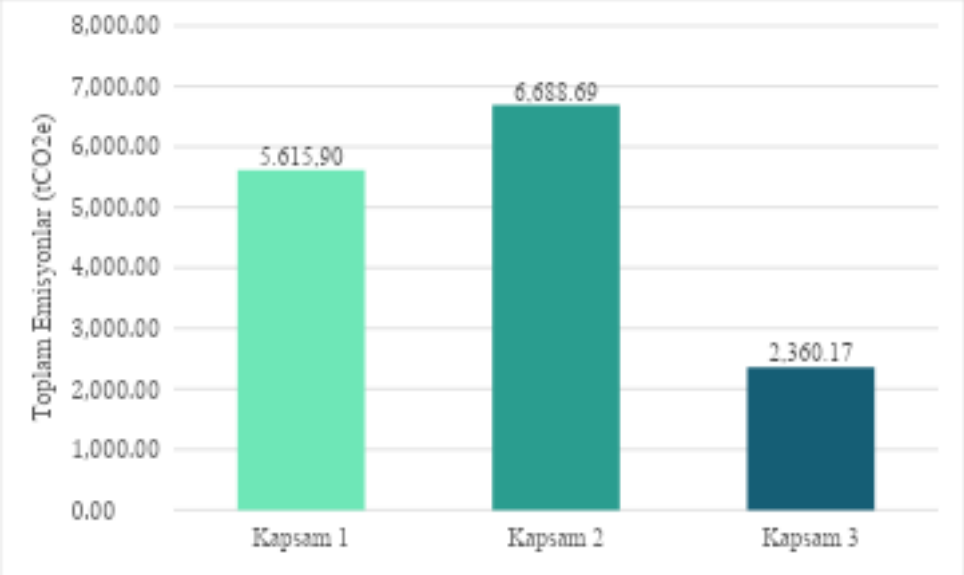

Figure 2. Greenhouse Gas Emissions by Scope

Scope 1 emissions refer to direct emissions from sources owned or controlled by the Organisation. Natural gas consumption constitutes the largest share of the Organisation's Scope 1 emissions, accounting for 5,092.69 tCO_2e, which represents 90.68% of Scope 1 emissions. Refrigerant gas leaks account for 4.99% of Scope 1 emissions, amounting to 280.25 tCO_2e. Figure 3 shows the environmental footprint shares of Scope 1 emissions.

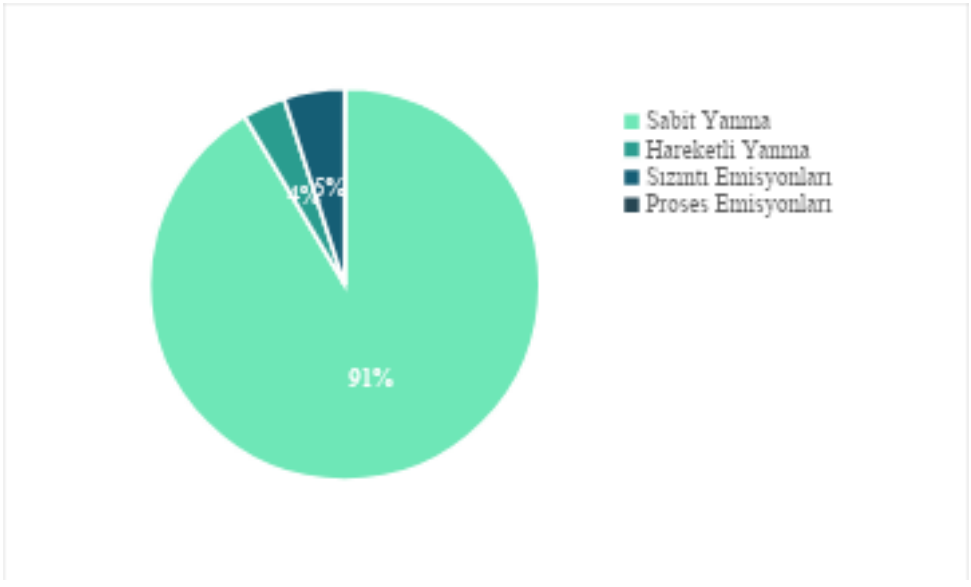

Figure 3. Distribution of Scope 1 Emissions

Scope 2 emissions refer to indirect emissions resulting from the production of electricity, steam, heating and cooling purchased or obtained by the Organisation. Electricity accounts for 100% of the Organisation's Scope 2 emissions, amounting to 6,688.69 tCO_2e. Figure 4 shows the environmental footprint shares of Scope 2 emissions.

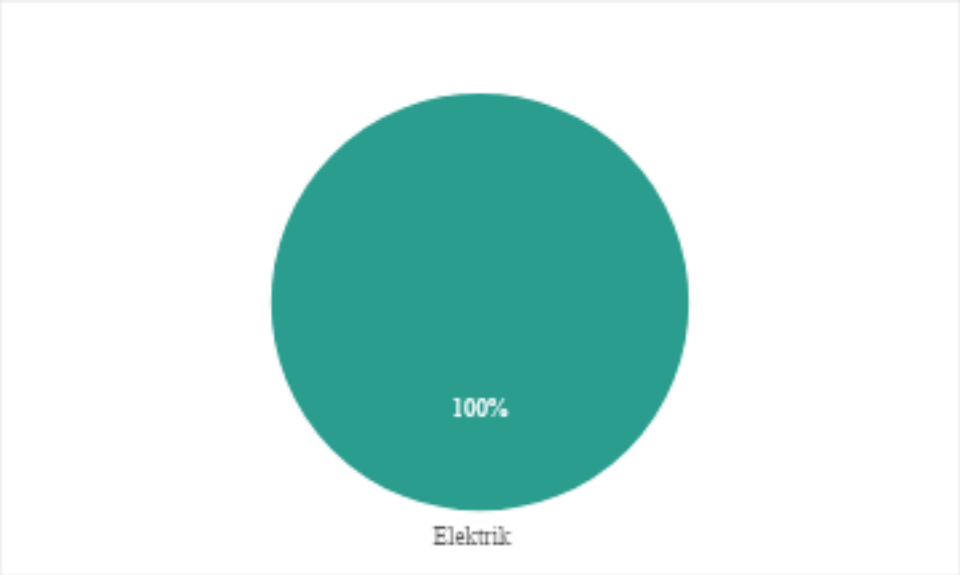

Figure 4. Distribution of Scope 2 (Location-Based) Emissions

Scope 3 emissions represent indirect greenhouse gas emissions arising from the Organisation's value chain and include suppliers, customers and other external stakeholders. WTT (Well-to-Tank) emissions amount to 849.12 tCO_2e, representing 35.98% of Scope 3 emissions. Capital Goods account for 18.43% of Scope 3 emissions, amounting to 434.95 tCO_2e. Business Travel accounts for 17.48% of Scope 3 emissions, amounting to 412.59 tCO_2e. Employees' Commutes account for 11.89% of the total, corresponding to 280.65 tCO_2e of emissions. Figure 5 shows the environmental footprint shares of Scope 3 emissions.

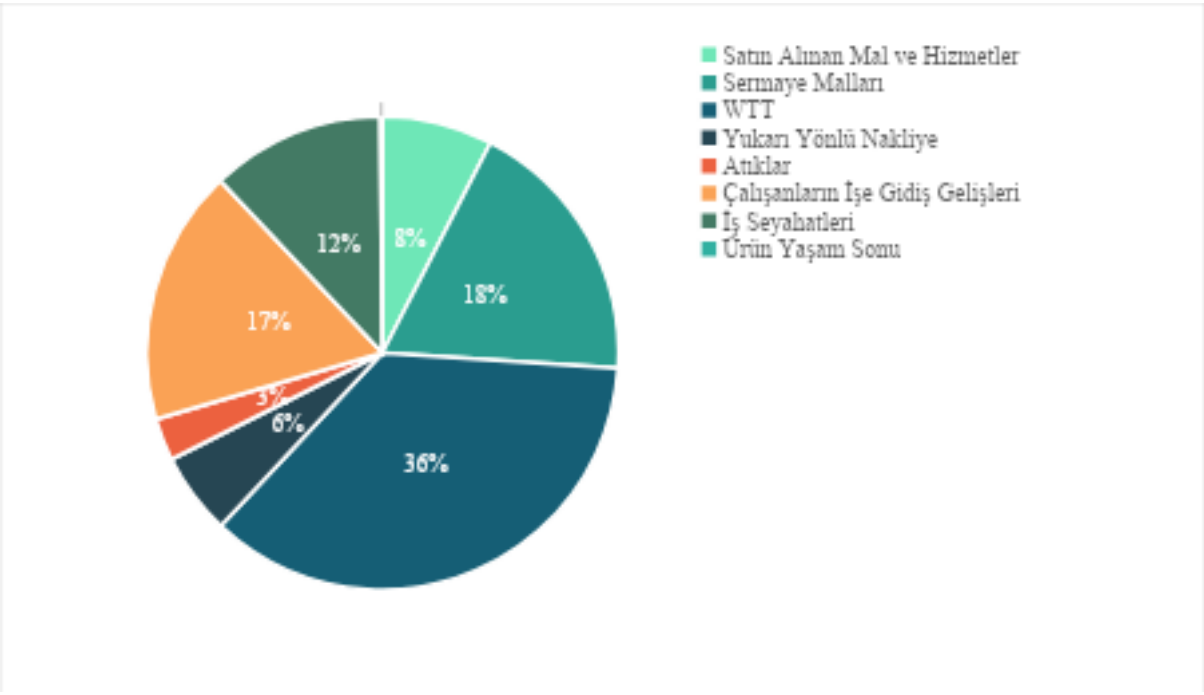

Figure 5. Distribution of Scope 3 Emissions

3.2. Emission Distribution by Category

Table 7. The Organisation's Scope 1 Emissions Breakdown

Category Name	Source Name	Activity Level	Unit	kg CO_2	kg N_2O	kg CH_4	Total kg CO_2e
Constant Combustion	Natural Gas	2,351,144.00	m^3	5,077,590.77	9.05	452.55	5,092,687.78
Fixed Combustion	Diesel (Fixed)	15,385.00	litre	40,803.36	0.33	5.51	41,047.19
Fixed Combustion	Petrol (Fixed)	400.00	litre	902.58	2.13	3.63	908.34
Mobile Combustion	Diesel (Mobile)	50,392.18	litres	133,268.62	1,914.86	195.69	135,379.17
Mobile Combustion	Petrol (Mobile)	27,070.59	litres	61,083.23	1,925.05	614.80	63,623.08
Leakage Emissions	R410A	115.35	kg	0	0	0	260,172.15
Leakage Emissions	R407C	5.58	kg	0	0	0	10,648.55
Leakage Emissions	R134A	5.55	kg	0	0	0	8,494.28
Unreported Emissions	R32	0.31	kg	0	0	0	239.01
Unreported Emissions	R600a	0.03	kg	0	0	0	0.10
Uncontrolled Emissions	CO_2 Fire Extinguisher	2,704.00	kg	2,704.00	0	0	2,704.00

Table 8. The Organisation's Scope 2 (Location-Based) Emissions Breakdown

Category Name	Campaign Name	Activity Level	Unit	kg CO2	kg N2O	kg CH4	Total kg CO_2e
Indirect Emissions from Purchased Electricity	Electricity	15,411,730.56	kWh	0	0	0	6,688,691.06

Table 9. The Organisation's Scope 2 (Market-Based) Emissions Breakdown

Category Name	Campaign Name	Activity Level	Unit	kg CO2	kg N2O	kg CH4	Total kg CO_2e
Indirect Emissions from Purchased Electricity	Electricity	15,411,730.56	kWh	0	0	0	6,688,691.06

Table 10. The Organisation's Scope 3 Emissions Breakdown

Category Name	Source Name	Activity Level	Unit	kg CO_2	kg N_2O	kg CH_4	Total kg CO_2e
Purchased Goods/Services	Other Purchases	98,440.00	kg CO_2e	98,440.00	0	0	98,440.00
Goods/Services Purchased	Water Consumption	421,179.00	m^3	80,571.54	0	0	80,571.54
Capital Assets	Fixed Assets	434,950.00	kgCO_2e	434,950.00	0	0	434,950.00
WTT	WTT Diesel	65,777.18	litre	41,050.88	0	0	41,050.88
WTT	WTT Natural Gas	2,351,144.00	m^3	791,395.07	0	0	791,395.07
WTT	WTT Petrol	27,470.59	litre	16,664.76	0	0	16,664.76
Upward Transport	Upward Transport	131,770.00	kgCO_2e	131,770.00	0	0	131,770.00
Waste	Wastewater	400,120.05	m^3	68,372.51	0	0	68,372.51
Waste	Paper-15 01 01 (Recycling)	23.42	tonnes	109.74	0	0	109.74
Waste	Plastic-15 01 02 (Recycling)	11.66	tonnes	54.64	0	0	54.64
Business Travel	Business Travel	412,590.00	kgCO_2e	412,590.00	0	0	412,590.00
Staff Commuting	Ring - Staff Transport Service	123,725.00	km	31,625.35	0	0	31,625.35
Staff Commuting	Other Staff Services	974,250.00	km	249,028.04	0	0	249,028.04
End-of-life	Paper - Recycling	15.66	tonnes	73.39	0	0	73.39
End-of-life product	Paper - Incineration	0.73	tonnes	3.40	0	0	3.40
End of Product Life	Paper - Regular Storage	2.98	ton	3,465.97	0	0	3,465.97
End-of-Life Product	Plastic - Regular Storage	0.04	ton	0.35	0	0	0.35

End-of-life	Plastic - Recycling	0.01	ton	0.04	0	0	0.04
End-of-life	Plastic - Incineration	0.01	tonnes	0.04	0	0	0.04

ANNEX 1: REFERENCE VALUES/SOURCES FOR GREENHOUSE GAS EMISSION CALCULATIONS

ANNEX 1.1: STATIONARY (FIXED) COMBUSTION

				CO2		CH4		N2O		
Activity (Campaign)	**Unit**	**Density (kg/l)**	**Net Calorific Value (TJ/Gg)**	**Emission Factor (kg CO2/TJ)**	**Global Warming Potential**	**Emission Factor (kg CO2/TJ)**	**Global Warming Potential**	**Emission Factor (kg CO2/TJ)**	**Global Warming Potential**	**References**
Natural Gas / Stationary Combustion	m^3	0.700	48.0	56,100	1	1	27.9	0.1	273	1 & 3
Diesel / Stable Combustion	litres	0.830	43.0	74,100	1	3	27.9	0.6	273	1 & 3

ANNEX 1.2: MOBILE COMBUSTION
ANNEX 1.2.1: ON-ROAD

				CO2		CH4		N2O		
Activity (Campaign)	**Unit**	**Density (kg/l)**	**Net Calorific Value (TJ/Gg)**	**Emission Factor (kg CO2/TJ)**	**Global Warming Potential**	**Emission Factor (kg CO2/TJ)**	**Global Warming Potential**	**Emission Factor (kg CO2/TJ)**	**Global Warming Potential**	**References**
Diesel / on-road	litres	0.830	43.0	74,100	1	3.9	27.9	3.9	273	4 & 5
Petrol / on-road	litres	0.735	44.3	69,300	1	25.0	27.9	8.0	273	4 & 5

APPENDIX 1.3: GLOBAL WARMING POTENTIAL (GWP)

Gas	Unit	GWP	References
CO2	kg	1	9
CH4	kg	27.9	9
N2O	kg	273	9
SF6	kg	25,200	9
HFC-134a	kg	1530	9
R410A	kg	2256	9
R404A	kg	4728	9
R417-A	kg	2515	9
R407C	kg	1908	9
R22	kg	1960	9
FM200 (HFC-227ea)	kg	3600	9

4. References

1. WRI's GHG Protocol.

2. 2006 IPCC Guidelines for National Greenhouse Gas Inventories – Volume 2 – Chapter 1 Introduction – Table 1.2 Default Net Calorific Values (NCVs) and Lower and Upper Limits of the 95% Confidence Interval.

3. 2006 IPCC Guidelines for National Greenhouse Gas Inventories – Volume 2 – Chapter 2 Stationary Combustion – Table 2.4 Default Emission Factors for Stationary Combustion in the Commercial Sector.

4. 2006 IPCC Guidelines for National Greenhouse Gas Inventories – Volume 2 – Chapter 3: Mobile Combustion – Table 3.2.1: Road Transport Default CO_2 Emission Factors and Uncertainty Ranges.

5. 2006 IPCC Guidelines for National Greenhouse Gas Inventories – Volume 2 – Chapter 3: Mobile Combustion – Table 3.2.2: Road Transport N_2O and CH_4 Default Emission Factors and Uncertainty Ranges.

6. 2006 IPCC Guidelines for National Greenhouse Gas Inventories – Volume 2 – Chapter 3: Mobile Combustion – Table 3.3.1: Default Emission Factors for Off-Road Mobile Sources and Machinery.

7. IPCC Sixth Assessment Report (AR6).

8. GHG Protocol – Calculating HFC and PFC Emissions from the Manufacturing, Installation, Operation and Disposal of Refrigeration & Air-Conditioning Equipment (Version 1.0) – Table 1: GWP of Common Greenhouse Gases and Refrigerants.

9. AR6 WGI Report – List of corrigenda to be implemented.

4. Boğaziçi University Campus List

Campus Name	Address	Description
South Campus	34342 Bebek, Istanbul	Main Campus - Administrative and academic units
North Campus	34342 Bebek, Istanbul	Faculties of Engineering and Science
Hisar Campus	34342 Bebek, Istanbul	Halls of residence and social facilities
Kandilli Campus	34684 Kandilli, Istanbul	Kandilli Observatory and Earthquake Research Institute
Kilyos Sarıtepe Campus	34450 Sarıyer, Istanbul	Engineering and educational facilities
Anti-Aircraft Campus	34342 Bebek, Istanbul	Sports facilities and staff accommodation
Anadolu Hisarı Campus	34810 Anadolu Hisarı, Istanbul	School of Foreign Languages

5. Summary Table of Greenhouse Gas Emissions

DIRECT GHG EMISSIONS		
1 - Direct GHG emissions and removals:	5,615.90	tCO2e
INDIRECT GHG EMISSIONS		
2 - Indirect GHG emissions from imported energy:	6,688.69	tCO2e
3 - Indirect GHG emissions from transport:	1,129.45	tCO2e
4 - Indirect GHG emissions from products used by the organisation:	613.95	tCO2e
5 - Indirect GHG emissions associated with the use of products by the organisation:	616.77	tCO2e

6 - Indirect GHG emissions from other sources:	0.00	tCO2e
TOTAL (Location-based)	14,664.76	tCO2e

Non-biogenic GHG emissions	0.00	tCO2e
Anthropogenic biogenic GHG emissions	0	tCO2e
Non-anthropogenic biogenic GHG emissions	0.00	tCO2e

GHG Emissions						
Scope	tCO2	tCH4	tN_2O	tHFCs	tSF6	tCO2e
Scope 1	5,313.65	1.27	3.85	282.25	0	5,615.90
Scope 2	0	0	0	0	0	6,688.69
Scope 3	0	0	0	0	0	2,360.17
Total	5,313.65	1.27	3.85	282.25	0	14,664.76

CORPORATE CARBON FOOTPRINT CALCULATION PROCEDURE

BOĞAZİÇİ UNIVERSITY

ISO 14064-1:2018 & Greenhouse Gas Protocol

08 April 2026

azalt
ESG Software

CORPORATE CARBON FOOTPRINT CALCULATION PROCEDURE

1. Purpose

The Procedure for the Determination and Assessment of Greenhouse Gas Emissions aims to systematically identify, assess and record greenhouse gas emissions resulting from the activities and services of **Boğaziçi University**; to calculate emissions in terms of carbon equivalents; and to clearly define the authority, responsibilities and methods for addressing identified non-conformities.

2. Scope

This procedure, prepared within the scope of the Determination and Assessment of Greenhouse Gas Emissions, covers all activities carried out in all departments of **Boğaziçi** University's production facilities.

3. Responsibilities

1. Under the Greenhouse Gas Emissions Determination and Assessment Procedure implemented at **Boğaziçi University**, the personnel assigned to the relevant departments, the environmental team and department managers are responsible.

Greenhouse Gas Officer (GGO)	This officer is responsible for coordinating the management system related to the greenhouse gas emissions inventory, supervising the work of relevant staff, and ensuring that processes are carried out appropriately. They are also responsible for the effective coordination of verification and audit processes.	The officer must understand the general operation of the greenhouse gas inventory, including the verification process; they must also be knowledgeable about relevant data collection methods and modelling standards.
Data Collection Officer (DCO)	This officer is responsible for the collection, management and recording of all data used in the calculation of the greenhouse gas emissions inventory. Furthermore, they are obliged to ensure that all relevant data is provided to them in a timely manner and to ensure that the data complies with the specified data collection standards and quality assurance procedures. Finally, ensuring that all data collection processes outlined in this document are carried out in accordance with relevant legislation and standards is also among the officer's responsibilities.	This officer must have a full understanding of the relevant data collection procedures and standards, as well as the requirements of quality and environmental management systems such as ISO 14001 and ISO 50001, and must have grasped the principles of their application.
Compliance Officer (CO)	This officer is responsible for ensuring that the emissions inventory model is developed and implemented in accordance with the methodology and calculation principles defined in this document.	This officer must have received training on the ISO 14064-1 standard and must have a full and accurate understanding of the relevant standards and emission modelling methodologies.

Energy Monitoring Officer (EMO)	This officer is responsible for the collection and recording of energy usage data, including electricity and fuel consumption, and for the timely transmission of the relevant information to the Data Collection Officer (DCO).	This officer must possess sufficient knowledge and competence regarding the operation of energy systems and service reporting processes.
Research Officer (AS)	This officer is responsible for providing support to the data collection process where necessary, conducting surveys, assessments, observations, etc. to obtain data, and reporting the results to the Data Collection Officer (DCO).	This officer must possess the necessary knowledge and competence regarding survey work and survey implementation methods.

4. Definitions

The definitions included in the procedure are set out below:

Greenhouse gas: Natural and anthropogenic gaseous components of the atmosphere that are absorbed and re-emitted by the Earth's surface, the atmosphere and clouds at specific wavelengths within the infrared radiation spectrum.
Note: The primary greenhouse gases are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6).

Greenhouse gas source: A physical unit, piece of equipment or process that emits greenhouse gases into the atmosphere.

Greenhouse gas sink: A physical unit or process that removes greenhouse gases from the atmosphere.

Greenhouse gas emissions: The total mass of any greenhouse gas released into the atmosphere over a specific period of time.

Direct greenhouse gas emissions: Emissions arising from greenhouse gas sources owned or controlled by the organisation.
Note: In this procedure, the scope of the organisation's activities is determined based on financial control and operational control approaches.

Energy-related indirect greenhouse gas emissions: These are greenhouse gas emissions generated during the production of electricity, heat or steam procured externally by the organisation and subsequently consumed.

Other indirect greenhouse gas emissions: These are emissions resulting from the organisation's activities, arising from greenhouse gas sources owned or controlled by other organisations, excluding energy-related indirect emissions.

Greenhouse gas activity data: A quantitative measure of the activity that causes a greenhouse gas emission or removal.
Note: Examples of activity data include the amount of fuel or electricity consumed, the quantity of products produced, the level of services provided, or the area of land affected.

Greenhouse gas statement: A statement made by the responsible party that is realistic and impartial in nature.
Note: A declaration may be prepared for a specific date or to cover a specific time period.

Greenhouse gas inventory: A comprehensive set of systematically compiled information regarding a organisation's greenhouse gas sources, sinks, emissions and removals.

Greenhouse gas project: An activity or set of activities carried out to reduce greenhouse gas emissions or increase greenhouse gas removals by altering the conditions specified in the baseline scenario.

Greenhouse gas report: An independent document prepared to present information on greenhouse gases relating to an organisation or project to its target users.
Note: A greenhouse gas report may include a greenhouse gas statement.

Global Warming Potential (GWP): A coefficient that enables the comparison of the radiative forcing caused by a greenhouse gas, on a mass basis, with that of carbon dioxide (CO_2) over a specific time period.
Note: The GWP values from the IPCC Sixth Assessment Report (AR6) may be used as a basis within the scope of this procedure.

Carbon dioxide equivalent (CO_2e): A unit of measurement that expresses the radiative effect of a greenhouse gas in terms of carbon dioxide.
Note: The CO_2e value is calculated by multiplying the mass of the relevant greenhouse gas by its global warming potential (GWP) factor.

Base year: A reference period used as the basis for comparing greenhouse gas emissions, removals or other greenhouse gas data in the future.
Note: Base year data may relate to a single year or be determined by taking the average of multiple years.

Facility: A single facility, group of facilities or production processes that can be defined within a specific geographical boundary, organisational unit or production process; these may be of a fixed or mobile nature.

Organisation: A company, firm, enterprise, institution, establishment or a part thereof, whether public or private, joint or non-joint, possessing its own management structure and operational responsibility.

Responsible party: The person or organisation responsible for preparing the greenhouse gas statement and submitting the relevant greenhouse gas information.

Target user: A person or organisation identified by greenhouse gas reporters and relying on this information in decision-making processes.
Note: The target user may be a client, the responsible party, greenhouse gas programme managers, regulatory bodies, financial institutions or other stakeholders (local authorities, public bodies, civil society organisations, etc.).

Guided activity: Specific activities or initiatives that, whilst not structured as a greenhouse gas project, aim to directly or indirectly reduce or prevent greenhouse gas emissions, or increase greenhouse gas removals.
Note 1: A greenhouse gas project is defined in ISO 14064-2.
Note 2: Guided activities may be implemented on a continuous or periodic basis.

Confidence level: The level of confidence required by the intended user during the validation or verification process.
Note 1: The assurance level determines the scope of the verification plan designed by the verifier to assess whether there are any material errors, omissions or misstatements.

Note 2: There are two levels of assurance: reasonable assurance and limited assurance. For the relevant verification statements, refer to ISO 14064-3 Clause A.2.3.2.

Verification statement: A formal written statement provided to intended users that provides assurance regarding the responsible party's greenhouse gas declaration.
Note: The verification statement may cover reported greenhouse gas emissions, removals, emission reductions or removal enhancements.

Verification: The process of evaluating a greenhouse gas statement in a systematic, independent and documented manner in accordance with the ISO 14064-3 standard.

Verifier: A competent and independent person or organisation that carries out verification activities and reports the results.
Note: This term may also be used for a verification body.

Uncertainty: A parameter associated with a measured or calculated quantity that expresses the distribution of values.
Note: Uncertainty information typically includes quantitative estimates of the likely distribution of values and qualitative assessments of the probable causes of this distribution.

TS ISO 14064-1:2018, Greenhouse Gases – Part 1: Guidance and requirements for the calculation and reporting of greenhouse gas emissions and removals at the organisational level.

5. Related Documents

Please review the annexes below.
Annex 1: Contains the **Boğaziçi University** Facility Greenhouse Gas Inventory List.
Appendix 2: Contains the List of Greenhouse Gas Responsible Persons at **Boğaziçi University**.
Appendix 3: Contains the **Boğaziçi University** Organisational Boundaries.

6. Procedure

6.1 General Procedure

1. At the start of each reporting year, the allocation of duties and job descriptions are determined by the Compliance Officer, based on the table on Page 1.
2. The allocation of duties and responsibilities is reviewed and approved by the Greenhouse Gas Officer.
3. This document is recorded and implemented by the Greenhouse Gas Officer.
4. The training needs of greenhouse gas officers are assessed by the Greenhouse Gas Officer; where deemed necessary, external greenhouse gas training is arranged.
5. Training for newly appointed staff is completed by the Greenhouse Gas Officer within the first month of the reporting year.
6. The provisions set out in this document are applied in full when preparing the Greenhouse Gas Inventory Report.
7. The reporting period covers the period from 1 January to 31 December (both dates inclusive) each year. All data collection processes are completed by the Data Collection Officer within the first two months of the following year. Greenhouse Gas Inventory calculations and reporting are carried out by the Greenhouse Gas Officer in accordance with the applicable ISO 14064-1 and/or GHG Protocol standards.
8. In the event of a change to the standard or methodology, this procedure is updated by the Compliance Officer in accordance with the relevant requirements.
9. The emission factors and other model parameters to be used in Greenhouse Gas Inventory calculations are regularly reviewed by the Compliance Officer, the Data Tracking Officer and the Greenhouse Gas Officer, and necessary updates are made.

10. The data required for Greenhouse Gas Inventory calculations is collected by the Data Monitoring Officer and, once verified, is used in the greenhouse gas calculations.
11. The Energy Monitoring Officer (EMO) carries out regular checks on all meters belonging to **Boğaziçi University**. The results of these checks are recorded in the meter tracking table and kept up to date.
12. The emissions inventory is compiled by the Compliance Officer using the calculation methods specified in this document.
13. The results obtained are documented and all relevant records are systematically archived.
14. The calculated greenhouse gas emissions and the prepared Greenhouse Gas Inventory Report are subject to accuracy checks annually by the Greenhouse Gas Officer through internal audits.
15. The methodology used in the selection of emission factors is specified in the Greenhouse Gas Inventory Report. The Compliance Officer ensures that the relevant methodology is correctly applied in the calculations each year.
16. From the first year of calculation onwards, all data and calculations relating to greenhouse gas emissions are regularly recorded and archived on the Azalt ESG Software by the responsible persons listed in Annex 2.
17. Based on the results of the greenhouse gas emission measurements and calculations carried out, gaps and areas for improvement are identified; necessary actions are taken to improve processes, and all processes are reviewed as part of annual internal audits.
18. Calculations relating to GES investments have been carried out based on certain assumptions, as the organisation was unable to access certain data directly. In this context, it has been assumed that the service procurement is based on installed capacity, and the calculations have been made in line with this assumption.

6.2 Sources and Sinks

Boğaziçi University's greenhouse gas sources and sinks are as follows;
Greenhouse gas sources: Listed in Annex 1.
Greenhouse gas sinks: None.

6.3 Uncertainty Calculations

1. When performing uncertainty calculations, the methodological approach used in *the GHG Protocol Uncertainty Calculation Tool* is adopted*,* and the same calculation principles are applied.

2. For greenhouse gas emission sources for which no measurement error information or calibration report is available, calculations are performed using the *default* uncertainty values published by the IPCC and the uncertainty ratios specified in the Measurement and Measuring Instruments Regulation.

6.4 System Boundaries

1. The organisational boundaries of **Boğaziçi University** cover the facilities defined in Section 2 of this guide, and these boundaries are reviewed and verified by the Greenhouse Gas Officer.
2. In the event of any changes to the organisational boundaries, the base year greenhouse gas emissions inventory is recalculated and updated by the Greenhouse Gas Officer.
3. In the event of changes to the activity boundaries, the baseline year greenhouse gas emissions inventory is revised by the Compliance Officer.
4. Where changes to the scope of work regarding other indirect greenhouse gas emissions are required, the participation of all responsible parties specified in the Role Descriptions document and the Compliance Officer's expert is ensured. The assessments carried out are recorded by the Greenhouse Gas Officer.

5. Activity data falling within the system boundaries is obtained by the Compliance Officer and the Data Monitoring Officer in accordance with the methodology defined in the Greenhouse Gas Inventory.
6. Internal audits are conducted at specified intervals by the research officer listed in the GHG Officers list in Annex 2. Furthermore, the GHG Officers and the Data Collection Officer conduct technical reviews and carry out regular reviews to improve information management processes.
7. All documents are recorded and retained electronically by the data collection officer specified in Annex 2, in accordance with the organisation's GHG information management procedures.

6.5 Energy

Energy consumption data relating to emission sources is collected by the Data Collection Officer and the Energy Monitoring Officer in accordance with the frequency and measurement units specified in the Greenhouse Gas Inventory Report.

Emission factors are reviewed at the start of each reporting period. In the event of changes to emission factors, the base year greenhouse gas inventory is recalculated and updated by the Greenhouse Gas Officer and the Compliance Officer.

7. Greenhouse Gas Inventory

The ISO 14064-1:2018 Standard classifies greenhouse gas emissions into six main categories:

1. **Direct Greenhouse Gas Emissions (Category 1):** Direct emissions from sources owned or controlled by the organisation.

2. **Energy-Related Indirect Greenhouse Gas Emissions (Category 2):** Indirect emissions resulting from the production of electricity, heat or steam procured externally and consumed by the organisation.

3. **Transport-Related Indirect Greenhouse Gas Emissions (Category 3):** Emissions arising from transport activities undertaken as part of the organisation's operations, but which the organisation does not own or control.

4. **Indirect Emissions from Products Used by the Organisation (Category 4):** Indirect emissions resulting from products and services purchased or used by the organisation for its operations.

5. **Indirect Emissions Associated with the Use of the Organisation's Products (Category 5):** Indirect emissions arising during the use phase of products produced or sold by the organisation.

6. **Indirect Emissions from Other Sources (Category 6):** Other indirect greenhouse gas emissions related to the organisation's activities that fall outside the above categories.

Under the GHG Protocol, greenhouse gas emissions are classified into three main *Scopes* and 15 categories under Scope 3:

1. ***Scope 1* – Direct Emissions:** Greenhouse gas emissions resulting directly from sources owned or controlled by the organisation.

2. **Scope *2* – Energy-related Indirect Emissions:** Indirect emissions resulting from the production of electricity, heat or steam purchased and consumed by the organisation.

3. **Scope *3* – Value Chain Emissions:**

1. Purchased goods and services
2. Capital goods
3. Fuel and energy activities outside Scopes 1 and 2
4. *Upstream* transport and distribution
5. Waste generated from operations
6. Business travel
7. Employees' commutes
8. Upstream leased assets
9. *Downstream* transport and distribution
10. Processing of sold products
11. Use of sold products
12. End-of-life of products
13. Downstream leased assets
14. *Franchises*
15. Investments

This framework enables organisations to systematically classify all direct and indirect greenhouse gas emissions generated throughout the value chain.

Greenhouse gas emissions are calculated using the following method:

$$SGE = FV * DF * EF * KIP$$

FV: Activity Data
DF: Conversion Factor
OF: Oxidation factor
EF: Emission Factor
GWP: Global Warming Potential

Calculations are carried out within a *three-tiered* approach, depending on data quality and availability:

Tier 3: Primarily, emission factors specific to the technology and the specific activity data are used. This represents the highest level of accuracy.

Where Tier 3 data is unavailable:

Tier 2: National emission factors for the relevant greenhouse gas emission source are used.

Where national emission factors are unavailable or insufficient:

Tier 1: International default emission factors published by the IPCC or DEFRA are used.

Calculations are carried out using emission factors corresponding to the appropriate tier level, taking into account data availability and reliability.

7. Direct Emissions

7.1 Direct Emissions from Stationary Combustion Sources

7.1.1 Stationary Combustion Natural Gas Consumption

1. Data is consolidated by the organisation.
2. The fuel quantity (Sm^3) used as activity data is converted to a weight unit using the density value of the relevant fuel obtained from the source published by the Turkish Ministry of Energy. It is then included in the calculation in terajoules (TJ) by multiplying it by the net calorific value (NCV) of the relevant fuel.
3. If the calibration certificate for the activity data is unavailable, the methodological approach used in the GHG Protocol Uncertainty Calculation Tool is adopted for uncertainty calculations.
4. If the calculations are carried out under the Regulation on the Monitoring of Greenhouse Gas Emissions, the necessary activity and emission data may be obtained from verified official reports.
5. Emission factors are obtained from the IPCC source.

7.1.2 Stationary Diesel Consumption

1. Data is consolidated by the organisation.
2. The fuel quantity (litres) used as activity data is converted to a weight unit using the density value of the relevant fuel obtained from the source published by the Turkish Ministry of Energy. It is then included in the calculation in terajoules (TJ) by multiplying it by the net calorific value (NCV) of the relevant fuel.
3. If the calibration certificate for the activity data is unavailable, the methodological approach used in the GHG Protocol Uncertainty Calculation Tool is adopted for uncertainty calculations.
4. If the calculations are carried out under the Regulation on the Monitoring of Greenhouse Gas Emissions, the necessary activity and emission data may be obtained from verified official reports.
5. Emission factors are obtained from the IPCC source.

7.2 Direct Emissions from Mobile Combustion Sources

7.2.1 Mobile Combustion – Diesel

1. Diesel consumption quantities are obtained based on relevant invoices, vehicle identification system records and diesel tank level/discharge reports, and are consolidated by the Authority.
2. Activity data obtained in litres (L) are converted to tonnes using the density value of diesel fuel and included in the calculations in tonnes. If the density value cannot be obtained, the conversion is carried out using the reference values set out in the “Regulation on the Improvement of Efficiency in the Use of Energy Sources and Energy”.
3. The relevant emission factors are obtained from the IPCC source.

7.2.2 Mobile Combustion – Petrol

1. Petrol consumption figures are obtained based on relevant invoices and vehicle identification system records and are consolidated by the Authority.
2. Activity data obtained in litres (L) are converted to tonnes using the density value for petrol and included in the calculations in this manner. If the density value cannot be obtained, the conversion is carried out based on the reference values set out in the “Regulation on the Improvement of Efficiency in the Use of Energy Resources and Energy”.
3. The relevant emission factors are obtained from the IPCC source.

7.3 Leakage Emissions from Anthropogenic Activities

7.3.1 Gas Leaks from Refrigeration Equipment and Fire Extinguishing Systems

1. For all equipment containing refrigerant gas and fire extinguishing systems and devices located within the facility boundaries; information regarding the type of device, its location within the facility, the type of gas it contains, and the gas capacity in kilograms is consolidated by the Authority to create a detailed inventory list.
2. Invoices, delivery notes and refill slips for all refrigerant-containing equipment and fire extinguishing systems that have undergone maintenance or gas refilling during the calculation year are obtained as supporting documents by the relevant unit and recorded.
3. Information regarding the source of the CO_2 used in CO_2-containing fire extinguishing devices is documented by the relevant unit following written confirmation from the supplier. For fire extinguishing systems containing gases other than CO_2 and FM200 ( ), the MSDS (Material Safety Data Sheet) for the relevant gas is obtained and shared by the relevant unit.

7.4 Leakage Emissions from Industrial Processes

7.4.1 Process Emissions

1. There are no process emission sources belonging to the organisation.

8. Energy-Related Indirect Emissions

8.1 Purchased Electricity

1. Total electricity consumption data for the calculation year is read and verified by the Organisation based on records obtained from distribution companies.
2. The consumption data obtained is compared with the monthly invoices issued by the electricity supplier; the tracking and verification of monthly data for year-end calculations is carried out by the Organisation.
3. Activity data representing the total electricity consumption across the organisation is included in the calculations in kWh units.
4. In the event that the calibration certificate for the electricity meters cannot be obtained, the uncertainty values specified in the Regulation on the Inspection of Measurement Instruments and Devices are used as the basis for calculations.

9. Indirect Emissions

9.1 Transport Indirect Emissions

9.1.1 Upstream Transport ( )

1. Indirect greenhouse gas emissions resulting from the transport of materials purchased by the organisation are included in the inventory calculations.
2. For purchased materials, cost (TRY) data for capital goods is included in the calculations.
3. Relevant emission factors are obtained from the EPA source.

9.1.2 Downstream Transport

1. There are no emission sources belonging to the organisation.

9.1.3 Staff Commuting

1. As part of the staff commuting service, the routes used, distances travelled (km) and number of journeys made during the relevant calculation year are provided and shared by the relevant unit.

2. Contracts signed with the transport service provider and relevant supporting documents are provided by the relevant unit for the purpose of verifying route information.
3. The collected activity data is included in the calculations in kilometres (km).
4. The relevant emission factors are obtained from the Defra source.

9.1.4 Business Travel

1. For business travel, service data relating to air, road and sea journeys undertaken using vehicles not under the organisation's operational control is consolidated by the relevant unit based on agency records and invoices, and submitted for reporting.
2. Where data cannot be disaggregated by business unit, aggregated data covering all business units is used. If the necessary data on accommodation cannot be obtained, this emission source is excluded from the calculations.
3. The calculation methodology for flights can be accessed via the my climate link.

9.1.5 Transport of Waste

1. Emissions resulting from the transport of waste generated by the organisation's activities to disposal or recovery facilities are included in the inventory.
2. Relevant activity data—including the quantities of waste generated (tonnes) and the transport distances to waste treatment facilities—is provided and shared by the relevant unit, together with waste declaration forms.
3. The collected data is converted into tonne-kilometres (tonne·km) for use in calculations and included in the inventory.
4. However, as waste transport is already included in the emission factor obtained from Defra, no additional waste transport calculation has been performed.

9.1.6 Services

1. Service purchases are classified by type (e.g. consultancy, maintenance and repair, cleaning, security, etc.) and the total annual expenditure for each service item is determined.
2. Where activity data is unavailable, appropriate emission factors (e.g. expenditure-based – $kgCO_2e$/currency unit) are selected based on the cost data for the relevant service items.
3. The calculation is carried out by multiplying the total cost for each service item by the relevant expenditure-based emission factor.
4. The source of the emission factors used (e.g. the EEIO database, DEFRA or similar international data sources) is specified in the Greenhouse Gas Inventory Report and is reviewed in each reporting period.
5. The calculation results are documented and included in the inventory, and the relevant supporting financial records are retained as supporting documentation.
6. The relevant emission factors are obtained from the EPA source.

9.2 Indirect greenhouse gas emissions resulting from products used by the organisation

9.2.1 Purchased Goods ( )

1. Emissions generated by goods used within the organisation, from production through the supply chain until they reach the organisation under the *'well-to-tank'* approach, are included in the inventory calculations.
2. Which goods are included in the inventory may be determined based on the results of a prioritisation (materiality) analysis. However, no materiality analysis has been carried out on behalf of the organisation. All purchases have been included in the inventory.

3. Activity data collected for purchased goods is included in the calculations in cost (TRY) units.
4. The relevant emission factors are obtained from the EPA source.

9.2.2 Capital Assets

1. Emissions generated by all fixed assets purchased by the organisation, from the *'well-to-tank'* approach, throughout the production and supply chain until they reach the firm, are included in the inventory.
2. Information regarding the type, technical/product composition and cost of the relevant fixed assets is obtained and shared by the relevant unit.
3. Activity data is included in the inventory calculations based on costs (TRY) in accordance with the expenditure-based calculation approach.
4. The relevant emission factors are obtained from the EPA source.

9.2.3 Water Supply and Water Treatment

1. Indirect greenhouse gas emissions related to water supply and use are included in the inventory scope.
2. Water consumption data is regularly read and recorded by a technician via two meters located at the facilities.
3. The meter readings are compared with the monthly invoices issued by the water supplier; for year-end calculations, the monthly data is consolidated by the Environmental Engineer.
4. If the calibration certificate for the water meters cannot be obtained, the uncertainty values specified in the Regulation on the Inspection of Measurement Instruments are taken into account in the calculations.
5. If data regarding wastewater treatment services for the locations cannot be obtained, calculations are made based on assumptions.
6. Activity data is included in the calculations in cubic metres (m^3).
7. Where water consumption data is unavailable for other facilities, calculations are carried out based on assumptions derived from the number of employees and included in the inventory.
8. In the wastewater calculation, 95% of the water consumed is assumed. (5% is assumed to be evaporation.)
9. The relevant emission factors are obtained from the Defra source.

9.2.4 Waste

1. Solid and liquid waste generated as a result of the organisation's activities is classified according to the disposal or recovery method applied and included in the greenhouse gas inventory calculations.
2. Relevant activity data—including waste type, disposal/treatment method and waste quantity—is obtained and shared by the relevant unit based on waste declaration forms.
3. Documented activity data is included in the calculations in tonnes.
4. Relevant emission factors are obtained from the Defra source.

9.2.5 Use of Sold Products and End-of-Life Assessment

1. Products provided to students by the institution have been included in the inventory.
2. The total quantity of products and materials sold is included in the inventory in tonnes.
3. Product disposal rates are obtained from the EPA source. A distinction is made in accordance with the disposal methods of recycling, incineration and landfill.
4. The relevant emission factors are obtained from Defra and EPA sources.

9.3 Other Indirect Emissions

9.3.1 *Well-to-tank* – Fuels

1. Indirect greenhouse gas emissions generated during the production and supply process of purchased fuels (within the scope of the well-to-tank approach) are included in the inventory calculations.
2. The necessary activity data is obtained from invoice records provided by the company as part of energy calculations, which show fuel consumption quantities, and is used in the calculations.
3. The relevant emission factors are sourced from Defra.

9.3.2 Electricity Transmission and Distribution

1. Indirect emissions arising from the production process of purchased electricity are included in the inventory calculations under the *well-to-tank* approach.
2. The necessary activity data is obtained from the company's billing records, which indicate electricity consumption levels, as part of the energy calculations.
3. Indirect emissions resulting from technical losses (*T&D losses)* occurring during the transmission and distribution stages of the purchased electricity are also calculated and included in the inventory.
4. The relevant emission factors are obtained from the document published by the Ministry of Energy and Natural Resources.

9.3.3 Leased Assets

1. Buildings, vehicles, equipment and other assets over which the organisation has no operational control and which are used under lease agreements are identified to create an inventory list.
2. Energy consumption data for the relevant assets (electricity, fuel, etc.) is obtained, where possible, directly from measurements, bills or meter readings.
3. Where consumption data is unavailable, an estimated calculation is performed using area (m^2), duration of use, vehicle mileage or similar activity indicators.
4. Emissions calculations are carried out using appropriate emission factors (national electricity factor, fuel factors, etc.).
5. If operational control exists over leased assets, the relevant emissions are reported under Scope 1 and 2; if operational control does not exist, they are assessed under Scope 3.
6. There are no leased assets.

9.3.4 Leased Assets

1. Buildings, facilities, vehicles and equipment owned by the organisation but leased to third parties are identified and recorded.
2. Where operational control lies with the tenant, energy consumption data for these assets is obtained from the tenant where possible.
3. Where data cannot be obtained, an estimated calculation is performed based on the asset's type, capacity, area of use, or sector-average consumption values.
4. Calculations are carried out using appropriate emission factors, and the results are reported under Scope 3 (Category 13 – Leased Assets).
5. If the organisation retains operational control over the leased asset, the relevant emissions are assessed under Scope 1 and 2.
6. There are no leased assets.

10. Reporting

1. Following the completion of each reporting period, the organisation's Greenhouse Gas Inventory / Carbon Footprint Report is prepared, and the verification process is planned and coordinated by the Greenhouse Gas Officer.

2. The Greenhouse Gas Officer is responsible for ensuring the report is prepared and published in accordance with the requirements set out in Clause 7 of ISO 14064-1 to ensure compliance with the ISO 14064-1 standard.
3. Any methodological changes, scope updates or data revisions made during the reporting process are documented by the Greenhouse Gas Officer, along with their justifications, and clearly stated in the report.

11. Verification

1. Prior to commencing the verification process, all calculation, control and documentation steps defined in this procedure must have been completed by the Greenhouse Gas Officer.
2. Verification is optional; it is carried out at the organisation's discretion unless there is a legal or contractual obligation to do so.
3. The organisation providing the verification service must meet the competence and independence criteria specified in the ISO 14064-3 standard. The verification process is planned and coordinated by the Greenhouse Gas Officer.
4. Prior to verification, a preliminary assessment meeting is held between the verifier and the Greenhouse Gas Officer; the scope, methodology and suitability of the prepared report are reviewed together.
5. The report submitted for verification must contain only the greenhouse gas emissions and related information included within the scope of the verification.
6. Upon completion of the verification, an official verification report is obtained from the verification body. This report must clearly state the purpose, scope and criteria of the verification activity, the selected assurance level (reasonable or limited assurance), any limitations, and the statement of assurance. The entire process is monitored and documented by the Greenhouse Gas Officer.

12. Base Year

1. For locations included in the inventory within the organisation, the first reporting year in which all categories are covered is 2024, and this year is accepted as the base year for the specified locations.
2. Any changes to previously used greenhouse gas emission and removal factors must be explained along with the rationale; where deemed necessary, the base year greenhouse gas inventory is recalculated.
3. In the event of a change to the base year, all data for the newly designated year is recalculated in accordance with the current methodology and reported in a manner that ensures comparability.

ANNEX 1: List of Greenhouse Gas Inventories

GREENHOUSE GAS INVENTORY LIST					
2025		**First Publication Date:**			
		Rev. No./Date:			
Emissions Scope	**Emission Category**	**Emission Source**	**Activity Data**	**EF Source**	**Greenhouse Gas**
Scope 1	Direct Emissions from Stationary Combustion Sources	Natural Gas	Consumption Data	IPCC, 2006; National Inventory	CO2, CH4, N2O
	Direct Emissions from Stationary Combustion Sources	Diesel	Consumption Data	IPCC, 2006; National Inventory	CO2, CH4, N2O

	Direct Emissions from Mobile Combustion	Diesel (Mobile Combustion)	Fuel Consumption	IPCC, 2006; National Inventory	CO2, CH4, N2O
	Direct Emissions from Mobile Combustion	Petrol (Mobile Combustion)	Fuel Consumption	IPCC, 2006; National Inventory	CO2, CH4, N2O
	Leakage Emissions from Anthropogenic Systems	Refrigeration Equipment	Inventory/Charging/Maintenance Reports	IPCC 6th AR	CO2 eq
	Leakage Emissions from Anthropogenic Systems	Fire Extinguishers	Inventory/Refill/Maintenance Reports	IPCC 6th AR	CO2 eq
Scope 2	Purchased Electricity		Invoices and Records	National Inventory 2023	CO2 eq
Scope 3	Purchased Goods and Services		Inventory List	EPA	CO2 eq
	Capital Goods		Inventory List	EPA	CO2 eq
	WTT		Inventory List	Defra, 2025, National Inventory 2023	CO2 eq
	Upstream Transport		Inventory List	EPA	CO2 eq
	Waste		Inventory List	Defra, 2025	CO2 eq
	Staff Commuting		Inventory List	Defra, 2025	CO2 eq
	Business Travel		Inventory List	MyClimate	CO2 eq
	End-of-Life		Inventory List	Defra, 2025; EPA	CO2 eq

ANNEX 2: List of Greenhouse Gas Emitters

LIST OF GREENHOUSE GAS RESPONSIBILITIES			Form No: 1 First Publication Date: …/…/… Rev. No/ Date:
Role	**First Name-Surname**	**Contact**	**Position**
Greenhouse Gas Officers (GGO)			
Data Collection Officer (DCO)			
Compliance Officer (CO)			
Energy Monitoring Officer (EMO)			
Research Officer (AS)			

ANNEX 3: Organisational Boundaries

Campus	**Institution Address**	**Description**
South Campus	34342 Bebek, Istanbul	Main Campus - Administrative and academic units
North Campus	34342 Bebek, Istanbul	Faculties of Engineering and Science

Hisar Campus	34342 Bebek, Istanbul	Halls of residence and social facilities
Kandilli Campus	34684 Kandilli, Istanbul	Kandilli Observatory and Earthquake Research Institute
Kilyos Sarıtepe Campus	34450 Sarıyer, Istanbul	Engineering and educational facilities
Anti-Aircraft Campus	34342 Bebek, Istanbul	Sports facilities and staff accommodation
Anadolu Hisarı Campus	34810 Anadolu Hisarı, Istanbul	School of Foreign Languages

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BOĞAZİÇİ ÜNİVERSİTESİ — QS ENVIRONMENTAL SUSTAINABILITY

Gösterge	Değer	Birim
GENEL BİLGİLER		
Raporlama Dönemi	2025 (Ocak–Aralık)	
Raporlama Standardı	GHG Protocol	
Operasyonel Sınır	Operasyonel Kontrol	
Doğrulama Kuruluşu	—	
Kampüs Sayısı	7	adet
Toplam Personel + Öğrenci	16.529	kişi
Toplam Kampüs Alanı	1.917.161,50	m²
EMİSYON ÖZETİ		
Kapsam 1 Emisyonları	5.615,90	tCO_2e
Kapsam 2 Emisyonları	6.688,69	tCO_2e
Kapsam 1+2 Toplam	**12.304,59**	tCO_2e
Kapsam 3 Emisyonları	2.360,17	tCO_2e
Toplam Emisyon (K1+K2+K3)	**14.664,76**	tCO_2e
KAPSAM 1 — TÜKETİM VERİLERİ		
Doğalgaz — Sabit Yanma		Sm³
Dizel Yoğunluk	0,8300	kg/L
Benzin Yoğunluk	0,7350	kg/L
KAPSAM 2 — TÜKETİM VERİLERİ		
Elektrik Tüketimi (Brüt)	15.956.492,462	kWh
Doğalgaz Tüketimi	2.351.144	Sm³
Elektrik Birim Fiyatı		TL/kWh
Motorin — Sabit Yanma	15.385	litre
Motorin — Hareketli Yanma	50.392,18	litre
Toplam Motorin	65.777,18	litre
Benzin — Sabit Yanma	400	litre
Benzin — Hareketli Yanma	27.070,59	litre
Toplam Benzin	27.470,59	litre
ENERJİ ÖZETİ		
Toplam Enerji Tüketimi	41.873.232,32	kWh
Toplam Enerji (MWh)	41.873,23	MWh
NORMALİZE METRİKLER		
tCO_2e / kişi	0,7444	tCO_2e/kişi
tCO_2e / m²	0,006418	tCO_2e/m²
kWh / kişi	2.533,32	kWh/kişi
YENİLENEBİLİR ENERJİ		
GES Üretimi	544.761,90	kWh
IREC Sertifikası	0	kWh
Toplam Yenilenebilir	544.761,90	kWh
Yenilenebilir Oran	1,30	%

DETAYLI HESAPLAMALAR

EMİSYON FAKTÖRLERİ

Kaynak	Emisyon Faktörü	Birim	Veri Kaynağı	Açıklama
Doğalgaz (DG)	2,166047	$kgCO_2e/Sm^3$	IPCC 2006	*Sabit yanma — CO_2+CH_4+N_2O*
Motorin — Sabit Yanma	2,668000	$kgCO_2e/L$	IPCC 2006	*Diesel/Gas Oil, Commercial/Institutional*
Benzin — Sabit Yanma	2,270860	$kgCO_2e/L$	IPCC 2006	*Motor Gasoline, Commercial/Institutional*
Motorin — Hareketli Yanma	2,686512	$kgCO_2e/L$	IPCC 2006	*Diesel/Gas Oil, Road Transport*
Benzin — Hareketli Yanma	2,350266	$kgCO_2e/L$	IPCC 2006	*Motor Gasoline, Road Transport*
Elektrik (TR Şebeke)	0,434000	$kgCO_2e/kWh$	Market-based	*Türkiye şebeke emisyon faktörü 2025*

ENERJİ DÖNÜŞÜM FAKTÖRLERİ

Doğalgaz → kWh	10,64	kWh/Sm^3	NHV bazlı	*Alt ısıl değer dönüşümü*
Dizel yoğunluk	0,8300	kg/L	Kullanıcı tanımlı	*Motorin yoğunluğu*
Benzin yoğunluk	0,7350	kg/L	Kullanıcı tanımlı	*Kurşunsuz benzin yoğunluğu*
Dizel enerji içeriği	43,00	TJ/Gg	IPCC 2006	*Gas/Diesel Oil NCV*
Benzin enerji içeriği	44,30	TJ/Gg	IPCC 2006	*Motor Gasoline NCV*

KAPSAM 1 EMİSYON HESAPLAMALARI

Kaynak	Tüketim Miktarı	Birim	Emisyon Faktörü	EF Birim	Emisyon (tCO_2e)	Formül
Doğalgaz	2.351.144	Sm^3	2,166047	$kgCO_2e/Sm^3$	5.092,69	*Tüketim x EF / 1000*
Motorin (Sabit Yanma)	15.385	litre	2,668000	$kgCO_2e/L$	41,05	*Tüketim x EF / 1000*
Benzin (Sabit Yanma)	400	litre	2,270860	$kgCO_2e/L$	0,91	*Tüketim x EF / 1000*
Motorin (Hareketli Yanma)	50.392,18	litre	2,686512	$kgCO_2e/L$	135,38	*Tüketim x EF / 1000*
Benzin (Hareketli Yanma)	27.070,59	litre	2,350266	$kgCO_2e/L$	63,62	*Tüketim x EF / 1000*
Soğutucu Gaz Kaçakları	—	—	—	—	282,26	*R410A(260,17)+R407C(10,65)+R134A(8,50)+R32(0,24)+R600a(0,00)+YS-CO2(2,70)*
KAPSAM 1 TOPLAM					**5.615,90**	*Toplam Kapsam 1 kaynakları*

KAPSAM 2 EMİSYON HESAPLAMALARI

Kaynak	Tüketim Miktarı	Birim	Emisyon Faktörü	EF Birim	Emisyon (tCO_2e)	Formül
Elektrik (Net Tüketim)	15.411.730,56	kWh	0,434000	$kgCO_2e/kWh$	6.688,69	*(Brüt Elektrik - GES) x EF / 1000*
KAPSAM 2 TOPLAM					**6.688,69**	*Elektrik kaynaklı emisyonlar*

ENERJİ HESAPLAMALARI

Kaynak	Tüketim Miktarı	Birim	Dönüşüm Faktörü	DF Birim	Enerji (kWh)	Formül
Elektrik (Brüt)	15.956.492,46	kWh	1,0000	—	15.956.492,46	*Doğrudan kWh değeri*
Doğalgaz	2.351.144,00	Sm^3	10,6400	kWh/Sm^3	25.016.172,16	*Sm3 x 10,64 kWh/Sm3*
Dizel (Toplam)	65.777,18	litre	9,9139	kWh/L	652.107,65	*L x (TJ/Gg x kg/L / 3,6)*
Benzin (Toplam)	27.470,59	litre	9,0446	kWh/L	248.460,04	*L x (TJ/Gg x kg/L / 3,6)*
TOPLAM ENERJİ					**41.873.232,32**	*Toplam enerji kaynakları*

NORMALİZE METRİKLER

Metrik	Pay	Pay Birim	Payda	Payda Birim	Sonuç	Formül
tCO_2e / kişi	12.304,59	tCO_2e	16.529	kişi	0,7444	*(Kapsam 1 + Kapsam 2) / Toplam Kişi*
tCO_2e / m^2	12.304,59	tCO_2e	1.917.161,50	m^2	0,006418	*(Kapsam 1 + Kapsam 2) / Kampüs Alanı*
kWh / kişi	41.873.232,32	kWh	16.529	kişi	2.533,32	*Toplam Enerji / Toplam Kişi*
kWh / m^2	41.873.232,32	kWh	1.917.161,50	m^2	21,84	*Toplam Enerji / Kampüs Alanı*
Yenilenebilir Oran (%)	544.761,90	kWh	41.873.232,32	kWh	1,30	*Yenilenebilir / Toplam Enerji x 100*

QS ENVIRONMENTAL SUSTAINABILITY UYUM TABLOSU

QS Göstergesi	Birim	Değer	Açıklama
Kapsam 1 Emisyonları	tCO_2e	5.615,90	*ISO 14064-1 uyumlu Kapsam 1*
Kapsam 2 Emisyonları	tCO_2e	6.688,69	*Market-based elektrik emisyonları*
Kapsam 3 Emisyonları	tCO_2e	2.360,17	*GHG Protocol uyumlu Kapsam 3*
Emisyon Yoğunluğu (kişi başı)	tCO_2e/kişi	0,7444	*Toplam emisyon / personel+öğrenci*
Emisyon Yoğunluğu (m² başı)	tCO_2e/m^2	0,006418	*Toplam emisyon / kampüs alanı*
Toplam Enerji Tüketimi	MWh	41.873,23	*Tüm enerji kaynaklarının toplamı*
Enerji Yoğunluğu (kişi başı)	kWh/kişi	2.533,32	*Toplam enerji / personel+öğrenci*
Enerji Yoğunluğu (m² başı)	kWh/m^2	21,84	*Toplam enerji / kampüs alanı*
Yenilenebilir Enerji Oranı	%	1,30	*GES üretimi / toplam enerji*

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