



Boğaziçi University

Boğaziçi University 2016-2024 Carbon Emission
Report

1. Introduction

We regularly report carbon emissions within the scope of our university's environmental sustainability efforts. These reports are carried out in accordance with internationally accepted standards. In particular, the GHG Protocol Corporate Standard is used as a basis for calculating and reporting greenhouse gas emissions. This standard provides an effective framework for managing and reducing carbon emissions.

Our university regularly measures greenhouse gas emissions to assess our environmental impact and monitor our carbon footprint. These reports enable us to evaluate our organization's environmental performance and progress towards achieving our sustainability goals.

This report has been prepared to provide a road map to understand, monitor and reduce our university's carbon emissions. Managing and reducing greenhouse gas emissions is a fundamental part of our organization's environmental sustainability efforts and helps us meet our commitments to our society.

2. Emission Standards and Definitions

The data included in the preparation of this report was obtained from existing sources and measurements made on campus. Calculation and reporting of carbon emissions was carried out in accordance with accepted standards.

Scope 1 Emissions

This includes the Greenhouse Gas (GHG) emissions the university directly produces when operating its boilers and vehicles.

Scope 2 Emissions

These are the indirect emissions made by the university; It covers Greenhouse Gas (GHG) emissions that occur when the electricity or energy purchased to heat and cool buildings is produced on behalf of the university.

3. Campus Based m2 Data

CAMPUS	GROSS AREA (M2)	NET AREA (M2)
ANADOLU HİSARI CAMPUS	30,647	27,117
BURSA İZNIK EARTHQUAKE DAMAGE MITIGATION CENTER	2193	1625
SOUTH CAMPUS	62,143	53,116
HİSAR CAMPUS	13,529	11,240
KANDİLLİ CAMPUS	43,613	40,907
KİLYOS CAMPUS	42,192	38,127
NORTH CAMPUS	91,961	78,452
MERSİN TARSUS GÖZLÜKULE RESEARCH CENTER	2,535	2,237
UÇAKSAVAR CAMPUS	42,803	30,356
TOTAL	331661 m2	283181 m2

Table 1. Closed Areas of Boğaziçi University (M2)

4. Campus Based Emission Data

South Campus					
Year	Electricity Consumption (kWh)	Carbon Footprint (kgCo ₂)	Natural Gas Consumption (Sm ³)	Carbon Footprint (kgCo ₂)	Total Carbon Footprint(tonCo ₂)
2016	-	-	566527	1144384.54	1144.38
2017	3157513.21	1553496,498	707806	1429768.12	2983.26
2018	3107315.72	1528799,334	594049	1199978.98	2728.78
2019	3368317.80	1657212,358	568819	1149014.38	2806.23
2020	2681102.64	1319102,499	581008	1173636.16	2492.74
2021	2622979.82	1290506,071	573620	1158712.4	2449.22
2022	3083552.08	1517107,623	556963	1125065.26	2642.17
2023	2868436.61	1411270,812	350704	708422	2119.69
2024	2941641,45	1447287,593	366197	739718	2187,01

Table 2. Scope 1 and Scope 2 (tCO₂e) Emission Values of Boğaziçi University South Campus

North Campus					
Year	Electricity Consumption (kWh)	Carbon Footprint (kgCo ₂)	Natural Gas Consumption (Sm ³)	Carbon Footprint (kgCo ₂)	Total Carbon Footprint(tonCo ₂)
2016	0	0	849040	1715060.8	1715.06
2017	5797184,404	2852214,727	1170218	2363840.4	5216.06
2018	5571626.61	2741240,292	860811	1738838.2	4480.08
2019	6309464.88	3104256,721	914465	1847219.3	4951.48
2020	4578666.12	2252703,731	788639	1593050.8	3845.75
2021	4217154,615	2074840,071	801955	1619949.1	3694.79
2022	5493495.74	2702799,904	887159	1792061.2	4494.86
2023	4818350,992	2370628,688	695993	1405905.9	3776.53
2024	5607371,37	2758826,714	358162	723487,24	3482,31

Table 3. Scope 1 and Scope 2 (tCO₂e) Emission Values of Boğaziçi University North Campus

Ucaksavar Campus					
Year	Electricity Consumption (kWh)	Carbon Footprint (kgCo 2)	Natural Gas Consumption (Sm ³)	Carbon Footprint (kgCo 2)	Total Carbon Footprint(tonCo 2)
2016	0	0	250284	505573.68	505.57
2017	1358726.49	668493,4331	284516	574722.32	1243.22
2018	1659640.69	816543,2195	242562	489975.24	1306.52
2019	1112980.35	547586,3322	201897	407831.94	955.42
2020	611184.25	300702,651	134742	272178.84	572.88
2021	588397.8	289491.7176	100576	203163.52	492.66
2022	845343,363	415908,9346	198306	400578.12	816.49
2023	750154,197	369075,8649	125731	253976.62	623.05
2024	566708,71	278820,6853	72541	146532,82	425,35

Table 4. Scope 1 and Scope 2 (tCO 2e) Emission Values of Boğaziçi University Ucaksavar Campus

Kandilli Campus					
Year	Electricity Consumption (kWh)	Carbon Footprint (kgCo 2)	Natural Gas Consumption (Sm ³)	Carbon Footprint (kgCo 2)	Total Carbon Footprint(tonCo 2)
2016	-	-	218159	440681.18	440.68
2017	1938278.19	953632.8695	224131	452744.62	1406.38
2018	1803059.21	887105,1313	252903	510864.06	1397.97
2019	2223155.1	1093792,309	256754	518643.08	1612.44
2020	2198137.14	1081483,473	289642	585076.84	1666.56
2021	2556445.6	1257771,235	324554	655599.08	1913.37
2022	3718512.62	1829508,209	427834	864224.68	2693.73
2023	3697149,199	1818997,406	390767	789349.34	2608.35
2024	4083112,45	2008891,325	389036	785852,72	2794,74

Table 5. Scope 1 and Scope 2 (tCO 2e) Emission Values of Boğaziçi University Kandilli Campus

Saritepe Campus					
Year	Electricity Consumption (kWh)	Carbon Footprint (kgCo 2)	Natural Gas Consumption (Sm ³)	Carbon Footprint (kgCo 2)	Total Carbon Footprint(tonCo 2)
2016	0	0	469069	947519.38	947.52
2017	1582202,204	778443,4843	483786	977247.72	1755.69
2018	1802338,255	886750,4215	448161	905285.22	1792.04
2019	1430738.85	703923,5142	430288	869181.76	1573.11
2020	1108318.78	545292.8398	291583	588997.66	1134.29
2021	1338034.6	658313.0232	400079	808159.58	1466.47
2022	1825736.27	898262,2448	315425	637158.5	1535.42
2023	1281252.84	630376,3973	218144	440650.88	1071.03
2024	774305,02	380958,0698	199667	403327,34	784,29

Table 6. Scope 1 and Scope 2 (tCO 2e) Emission Values of Boğaziçi University Saritepe Campus

Hisar Campus					
Year	Electricity Consumption (kWh)	Carbon Footprint (kgCo 2)	Natural Gas Consumption (Sm ³)	Carbon Footprint (kgCo 2)	Total Carbon Footprint(tonCo 2)
2016	-	-	208620	421412.4	421.41
2017	830017.7	408368,7084	123751	249977.02	658.35
2018	820081.21	403479.9553	179297	362179.94	765.66
2019	880245,548	433080,8096	154086	311253.72	744.33
2020	500450.86	246221,8231	87554	176859.08	423.08
2021	525445	258518.94	103252	208569.04	467.09
2022	829113,319	407923,7529	175782	355079.64	763.00
2023	779717,484	383621.0021	128178	258919.56	642.54
2024	729221,8	358777,1256	81224	164072,48	522,85

Table 7. Scope 1 and Scope 2 (tCO 2e) Emission Values of Boğaziçi University Hisar Campus Campus

5. Carbon Emissions from Personnel Transportation Services

Table 8 presents Scope 1 emission values sourced from Boğaziçi University's personnel services. Scope 1 emissions refer to the direct greenhouse gas emissions resulting from sources that are owned or controlled by the university. In this context, emissions are calculated based on the university's transportation services provided to personnel, reflecting the total annual kilometers traveled and the associated carbon footprint measured in tons of CO₂ equivalent (tCO₂e). These values are significant for assessing the direct environmental impact of the university's transportation practices and forming targeted strategies for emissions reduction.

Carbon Footprint from University-Wide Personnel Service			
Year	Personal number	Total km/year	Total Carbon Footprint(tonCO ₂)
2023	1148	813,020	269.83
2024	1148	813,020	269.83

Table 8. Scope 1 (tCO₂e) Emission Values Sourced from Boğaziçi University's Personnel Services

6. Renewable Energy Utilization and Carbon Emission Reductions

Our university clearly demonstrates its commitment to renewable energy sources to achieve environmental sustainability goals. In this context, serious efforts are being made to provide some of the energy consumption on our campus from renewable sources. The total annual energy produced from renewable energy sources is monitored and reported in detail through the tables presented as part of our report. In this way, it is possible to monitor and evaluate our progress in reducing our institution's environmental impact and supporting sustainability efforts. Table 9 and Table 10 express the total annual energy (kWh equivalent) produced from renewable energy sources within Boğaziçi University. Table 11 shows the data on electrical energy purchased from companies with Renewable Energy Certificates through the Green Energy Agreement made in 2024.

Electricity Generation from RES Sources			
Year	Electricity Consumption (kWh)	Carbon Footprint (kgCO ₂)	Total Carbon Footprint(tonCO ₂)
2016	1669370	821330.04	821.33
2017	1410615	694022.58	694.02
2018	1535658	755543.74	755.54
2019	-	-	-
2020	1605211	789763.81	789.76
2021	1605537	789924.20	789.92
2022	1590320	782437.44	782.44
2023	1640827	807286.88	807.29
2024	641917	315823,34	315,82

Table 9. Emission Gain Values (tCO₂e) from Boğaziçi University's Wind Power Plant (BÜRES)

Electricity Generation from Solar Power Plant			
Year	Electricity Consumption (kWh)	Carbon Footprint (kgCo ₂)	Total Carbon Footprint(tonCo ₂)
2016	44866.05	22074.10	22.07
2017	34079.00	16766,868	16.77
2018	25335.50	12465,066	12.47
2019	22619.70	11128.8924	11,13
2020	16029.10	7886.32	7.89
2021	15115.98283	7437.06	7.44
2022	11025,46585	5424.53	5.42
2023	6934.94888	3411.99	3.41
2024	20329,47	10002,10	10,00

Table 10. Emission Gain Values (tCO₂e) from Boğaziçi University's Solar Power Plant (SPP)

Green Energy Resource Utilization Agreement			
Year	Electricity Consumption (kWh)	Carbon Footprint (kgCo ₂)	Total Carbon Footprint (tonCo ₂)
2024	12000000	5904000,00	5904,00

Table 11. Emission Gain Values (tCO₂e) from purchased renewable energy

Boğaziçi University Carbon-negative Biorefinery	
Yıl	Carbon Capture Amount (tonCo ₂)
2024	1200,00

Table 12. Boğaziçi University Carbon-Negative Biorefinery (INDEPENDENT Project) Overview

BOĞAZIÇI UNIVERSITY CARBON FOOTPRINT	
Year	Total Carbon Footprint(tonCo ₂)
2016	4331.23
2017	12552.16
2018	11703.03
2019	12631.87
2020	9337.66
2021	9686.23
2022	12157.82
2023	10300.32
2024	8670,73

Table 12. (Tco₂e) for Reporting Years

7. Annual Carbon Emission Trends and Strategic Sustainability Initiatives

The data on carbon dioxide emissions serve as a vital tool in assessing Boğaziçi University's environmental impact and in shaping our long-term sustainability strategies. Year-over-year fluctuations in the university's carbon footprint are influenced by several factors, including changes in energy consumption, infrastructure investments, and evolving environmental policies.

According to the emission records, a notable increase was observed in 2017, primarily due to the initiation of comprehensive data collection. In contrast, a decline was recorded in 2020 and 2021, reflecting the positive effects of policy changes and the broader impact of the COVID-19 pandemic. During this period, campus closures and the shift to remote work significantly reduced energy consumption, resulting in lower emissions.

Following the pandemic, emissions increased in 2022 and 2023, a trend considered normal due to the return to on-campus activities. However, in 2024, Boğaziçi University demonstrated the effectiveness of its enhanced sustainability efforts, including energy efficiency improvements and expanded use of renewable energy sources, leading once again to a reduction in emissions.

A pioneering example of the university's commitment to climate action is the [INDEPENDENT Project](#), launched in 2021 at the **Sarıtepe Campus**, which has been carbon-neutral since 2015. As Europe's first **carbon-negative biorefinery**, the INDEPENDENT project offers an annual capacity to capture and utilize approximately **1,200 tons of carbon dioxide**. Operating entirely on **100% renewable wind energy**, the project exemplifies circular and zero-waste principles through its innovative bioenergy applications.

In addition to reducing carbon emissions, the project contributes to **energy, food, health, environment, agriculture, and livestock sectors** by developing algae-based alternative products. These products eliminate the use of fossil-based resources in their production, providing a dual-gain approach to sustainability. With its nutrient-rich, algae-based food products, the project supports the **"farm-to-fork" strategy** without utilizing fertile agricultural lands, offering forward-looking, sustainable solutions. Furthermore, the project actively supports the goals of both the **European Green Deal** and **Turkey's national sustainability agenda**.

Collectively, these efforts provide a solid foundation for Boğaziçi University to monitor, evaluate, and continuously reduce its carbon footprint while advancing innovative, science-driven environmental solutions.