Template for Evidence(s)
UI GreenMetric Questionnaire

University   :   Gebze Technical University
Country   :   Türkiye
Web Address :   www.gtu.edu.tr

[2] Energy and Climate Change (EC)

[2.11] Total carbon footprint (CO_2 emission in the last 12 months, in metric tons)

As part of the UI GreenMetric World University Rankings 2023 assessment, the carbon footprint of Gebze Technical University was calculated manually. The following equation was used for the calculation.

Carbon Footprint = Activity Data x Emission Factor

Calculation of Carbon Footprint Per Year

The Carbon footprint calculation can be conducted based on the stage of calculation as stated in www.carbonfootprint.com, which is the sum of electricity usage per year and transportation per year.

Electricity usage per year (EC 2.7)
CO_2 (electricity)
The CO_2 emission from electricity
= (electricity usage per year in kWh/1000) x 0,84

$$= \frac{7.229.796,26 \; kWh}{1000} \times 0,84$$

= 6.073,03 metric tons

Notes:
Electricity usage per year= 7229796,26kWh
0,84 is the coefficient to convert kWh to metric tons
(source: www.carbonfootprint.com)

Transportation per year (Shuttle) (TR 5.6)
CO_2 (bus)
= (Number of the shuttle bus in the university x total trips for shuttle bus service each day x approximate travel distance of a vehicle each day inside campus only (in kilometers) x 261/100) x 0.01

$$= \frac{8 \times 5 \times 5 \; \times \; 261}{100} \times 0,01$$

= 5,22 metric tons

Notes:
261 is the number of working days per year
0,01 is the coefficient (source: www.carbonfootprint.com) to calculate the emission in metric tons per 100 km for bus

Transportation per year (Car) (TR 5.2)

CO_2 (cars)

= (Number of cars entering the university x 2 x approximate travel distance of a vehicle each day inside campus only (in kilometers) x 261/100) x 0,02

$$= \frac{489 \times 2 \times 1,5 \times 261}{100} \times 0,02$$

= 76,57 metric tons

Notes:

261 is the number of working days per year

0,02 isthe coefficient (source: www.carbonfootprint.com) to calculate the emission in metric tons per 100 km car

Transportation per year (Motorcycle) (TR 5.3)

CO_2 (motorcycle)

= (Number of motorcycle entering the university x 2 x approximate travel distance of a vehicle each day inside campus only (in kilometers) x 261/100) x 0,01

$$= \frac{10 \times 2 \times 6 \times 261}{100} \times 0,01$$

= 3,13 metric tons

Notes:

261 is the number of working days per year

0,01 isthe coefficient (source: www.carbonfootprint.com)to calculate the emission in metric tons per 100 km motorcycle

Total emission per year

= total emission from electricity usage + transportation (bus, car, motorcycle)

= 6.073,03 + 5,22 + 76,57+3,13

= 6.157,95 metric tons

Carbon footprint in 2023 = 6.157,95 metric tons

Total Carbon Footprint (Gebze Technical University, Turkiye)

Description:

The carbon footprint of Gebze Technical University has been calculated according to Appendix 3 of the UI GreenMetric Guideline 2023. As a result, GTU's carbon footprint for 2023 is 6,157.95 metric tons. In addition, the number of vehicles entering GTU on a monthly basis and the amount of monthly electricity use for 2023 are shown in the tables in the appendix.

Additional evidence link: https://greenmetric.ui.ac.id/wp-content/uploads/2023/05/UI-GreenMetric-Guideline-2023-1.pdf

Total cars entering university

The information from transportation unit of GTU for each month of 2023 entrance for cars. Total cars were recorded as 130142 for year 2023.

Annual Vehicle Entry Statistics

Start Time	: 01.01.2023	00:00
End Time	: 31.12.2023	23:59

Annual Vehicle Entry Number			
	Subscription Vehicle	Guest Vehicle	Total
January	7706	1172	8878
February	5949	1079	7028
March	9050	1391	10441
April	7961	1096	9057
May	9411	2059	11470
June	8788	1095	9883
July	7045	1846	8891
August	7795	2142	9937
September	8053	2762	10815
October	9923	3621	13544
November	9875	5879	15754
December	10052	4392	14444

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Electricity usage for 2023

Electricity usage of GTU is 7.229.796,26 KW for the year 2023.