

UNIVERSITY OF TWENTE.

Carbon Footprint Report 2021



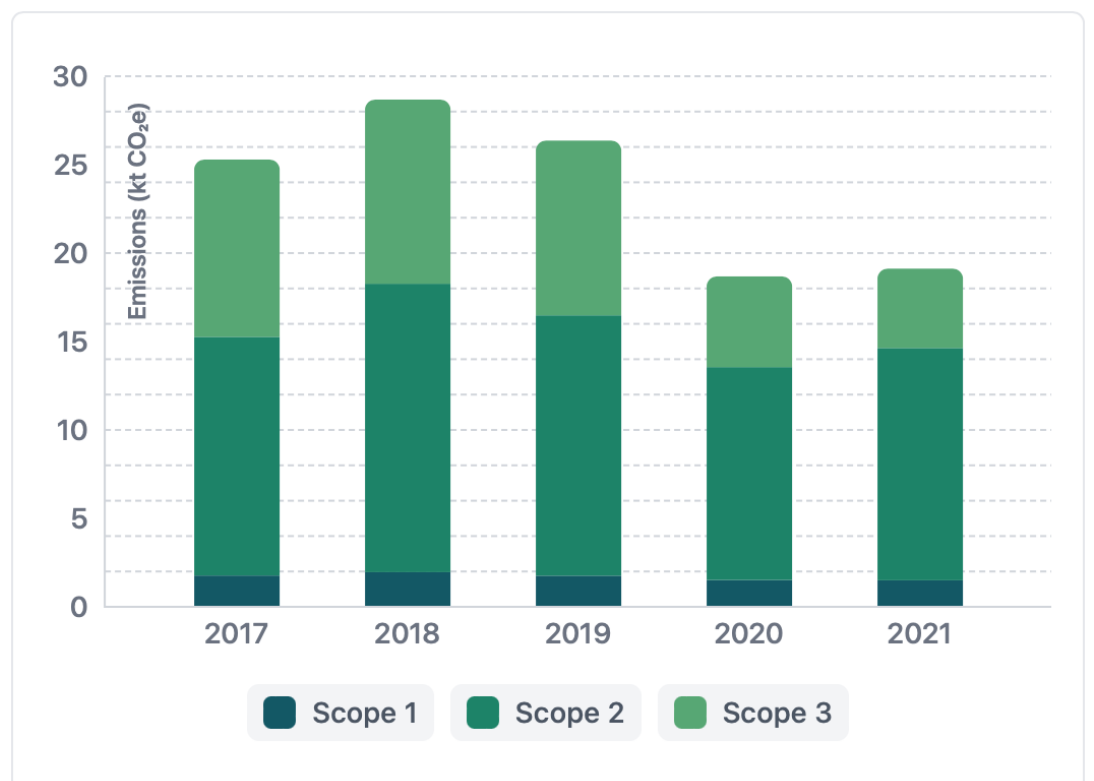
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University of Twente Carbon Footprint 2021

Summary

The university has been assessing its environmental impact by reporting her carbon footprint since 2014. The carbon footprint reflects not only the impact of the activities of the university itself, but is also used as a tool to encourage its partners to report their greenhouse gas emissions and work together towards a sustainable future. The carbon footprint enables monitoring of progress of the strategic goal to: "Implement sustainable solutions on our campus in the areas of food, water, waste, travel and energy use, thereby reducing our footprint by 15% in 2023."

The carbon footprint of 2021 with 19.1 kton is comparable to 2020, still significantly affected by COVID measures in energy consumption, commuting and business travel.



Introduction

Dear reader,

Thank you for reading the University of Twente 2021 carbon footprint report. Every year the university reports their carbon footprint with the goal of providing full transparency of its impact. The ambition of the university is to reduce her carbon footprint by 15% in 2023 as set by the Shaping 2030 strategy. This year, the report has a new look and feel. The report is generated by the Carbon Platform that is being implemented at the university.

With the developed Carbon Platform the aim is to increase data acquisition, improve communication and create more impactful policies. The previous reports were snapshots of our carbon footprint of what we had insightful at that moment in time. As organisations supply us with information throughout the year this is often added the year after, making a report incomplete.

That is why the carbon footprint report will become a dynamic webpage, with the same aim as for instance the Energy data platform. Increasing data acquisition where possible, such as Flying or Waste allows us to more closely follow the measures taken and create guidance where needed. Presenting this directly coupled with our data allows for the most recent numbers to be public, in line with the aim to have full transparency.

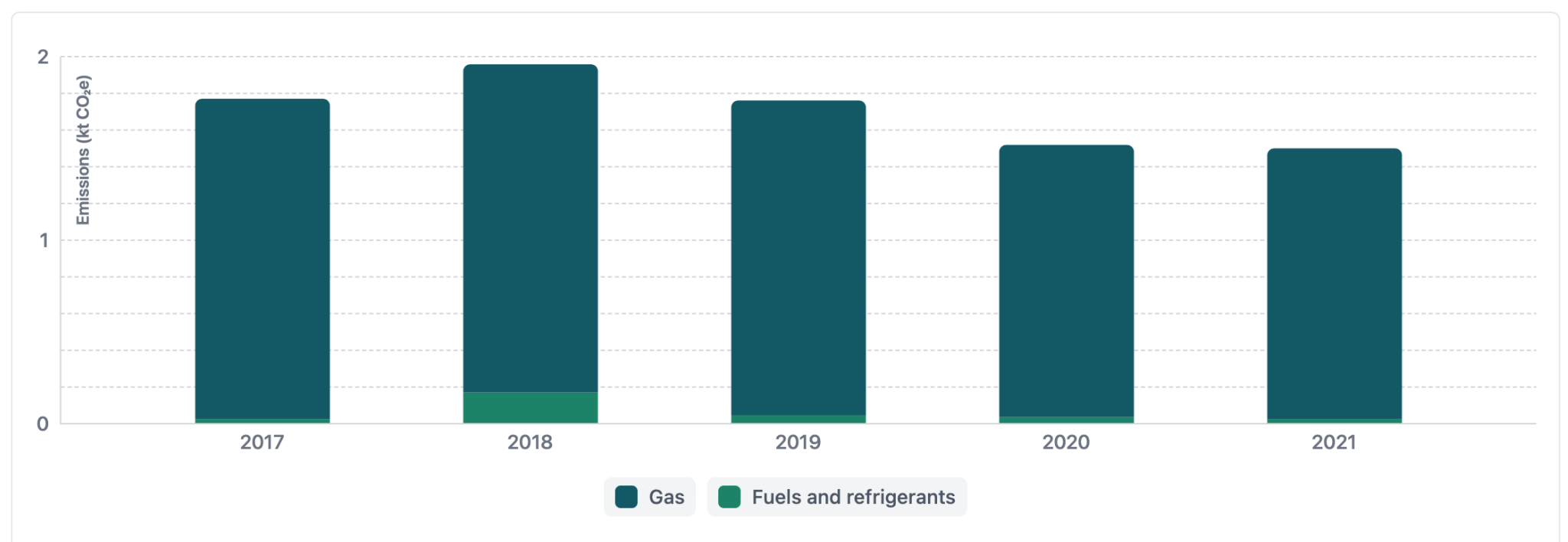
Diederik Bakker, Olaf Haalstra, Nando Tolboom

Scope 1 - Direct Emissions

The University of Twente has various direct sources of GHG emissions. The majority of the CO₂ emissions in scope 1 come from gas used for air humidification and heating of buildings where district heating is not yet available. The gas consumption of the university is low as most buildings use district heating. Real-time information about energy consumption can be found at energydata.utwente.nl.

The residual emissions in scope 1 are the fuels and refrigerants used at the university. The refrigerants are incidental refills of air conditioning systems and do not occur each year. The emissions of all sources and the total is given in the table below.

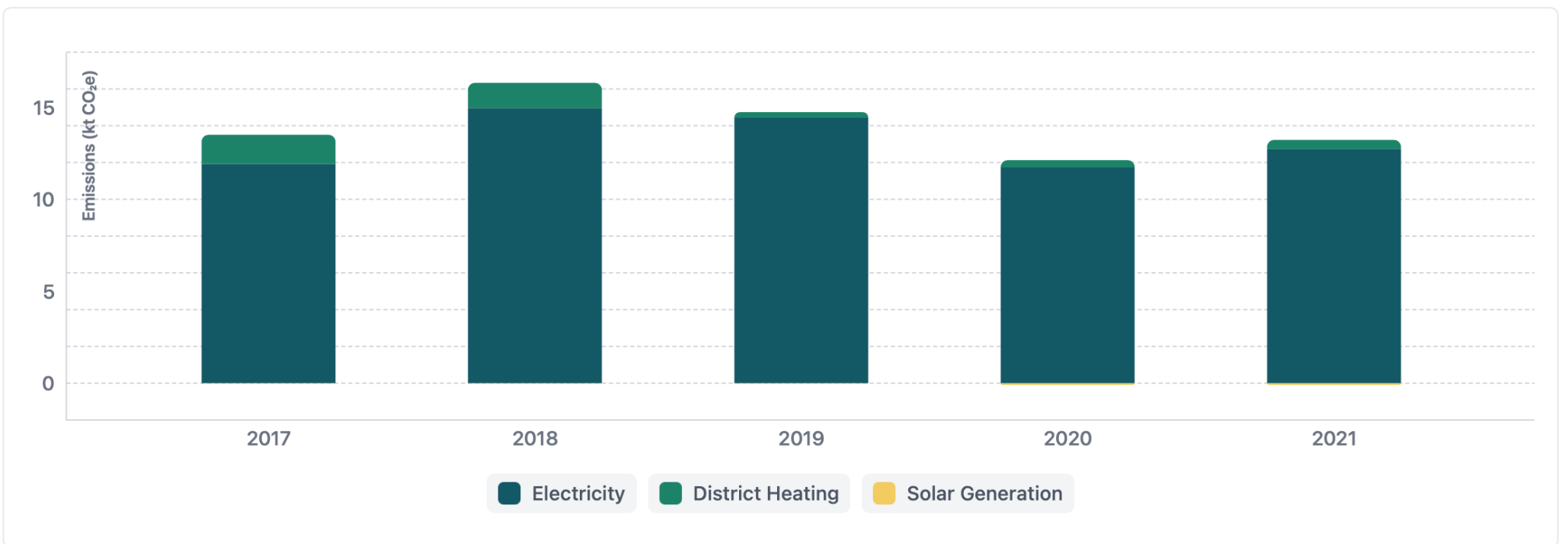
CATEGORY	UNIT	2017	2018	2019	2020	2021
Gas	kg CO ₂ e	1,744,224.3	1,788,119.55	1,714,989.78	1,483,314.65	1,473,759
Petrol	kg CO ₂ e	0	0	7,958.43	8,143.76	7,565.8
Diesel	kg CO ₂ e	14,513.27	26,998.13	31,955.64	21,929.55	19,012.31
Refrigerant R134a	kg CO ₂ e	0	61,490	0	0	0
Refrigerant R410a	kg CO ₂ e	11,797.2	65,772	6,264	5,637.6	0
Refrigerant R407c	kg CO ₂ e	0	15,788.6	0	0	0
Scope 1	kg CO ₂ e	1,770,534.77	1,958,168.28	1,761,167.85	1,519,025.55	1,500,337.1



Scope 2 - Indirect Emissions

Indirect GHG emissions are caused by the electricity and district heating consumed at the university. These forms of energy are generated elsewhere but are directly consumed by the university. The total consumption of electricity of the university is accounted and the generation of solar is discounted from that. The solar generation occurs at the Horst and Technohal buildings.

CATEGORY	UNIT	2017	2018	2019	2020	2021
Electricity	kg CO ₂ e	11,924,607.78	14,961,498.24	14,439,229.77	11,750,795.9	12,715,827.31
Solar Generation	kg CO ₂ e	-13,131.59	-19,813.32	-18,419.92	-94,194.18	-93,644.86
District Heating	kg CO ₂ e	1,583,655.38	1,369,286.52	300,140.5	378,032.4	512,595.83



Scope 3 - Sphere of Influence

The third scope of the carbon footprint considers upstream and downstream GHG emissions. Upstream refers to purchased goods and services, waste, rented assets, work-related travel and transport and distribution while downstream includes waste processing, let assets, investments and transport and distribution.

The upstream and downstream categories are further specified and aligned with the university's strategy into: Business Travel, Commuting, Procurement, Waste and Water. In these categories, the supply of data from third parties varies yearly. More details per category are provided below.



CATEGORY	UNIT	2016	2017	2018	2019	2020	2021
Business Travel	kg CO ₂ e	4,924,303.71	4,132,388.86	4,045,016.67	2,892,563.23	675,978.9	293,855.19
Commuting	kg CO ₂ e	5,453,419.12	4,493,054.2	4,723,731.7	4,976,383.21	2,390,434.08	2,400,418.19
Procurement	kg CO ₂ e	937,026.43	741,908.8	912,279	1,227,628.53	1,282,580.1	982,947.4
Waste	kg CO ₂ e	133,000	529,000	607,000	631,000	749,913.93	775,464.2
Water	kg CO ₂ e	107,047.5	126,193.5	121,468.5	150,033	28,896.84	32,420.21
Scope 3	kg CO ₂ e	11,554,796.75	10,022,545.36	10,409,495.87	9,877,607.97	5,127,803.85	4,485,105.19

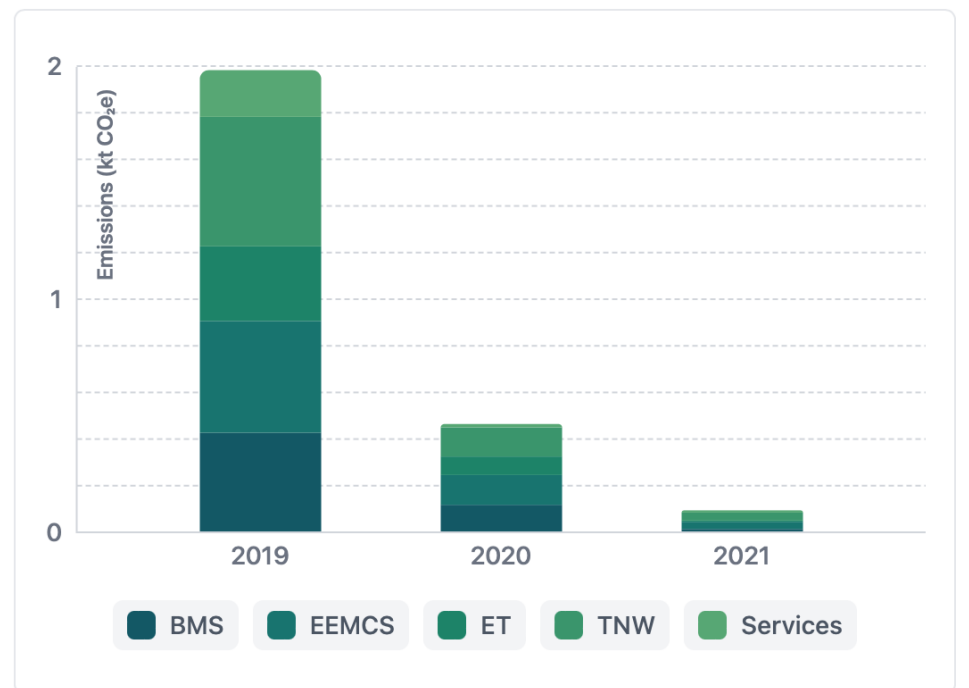
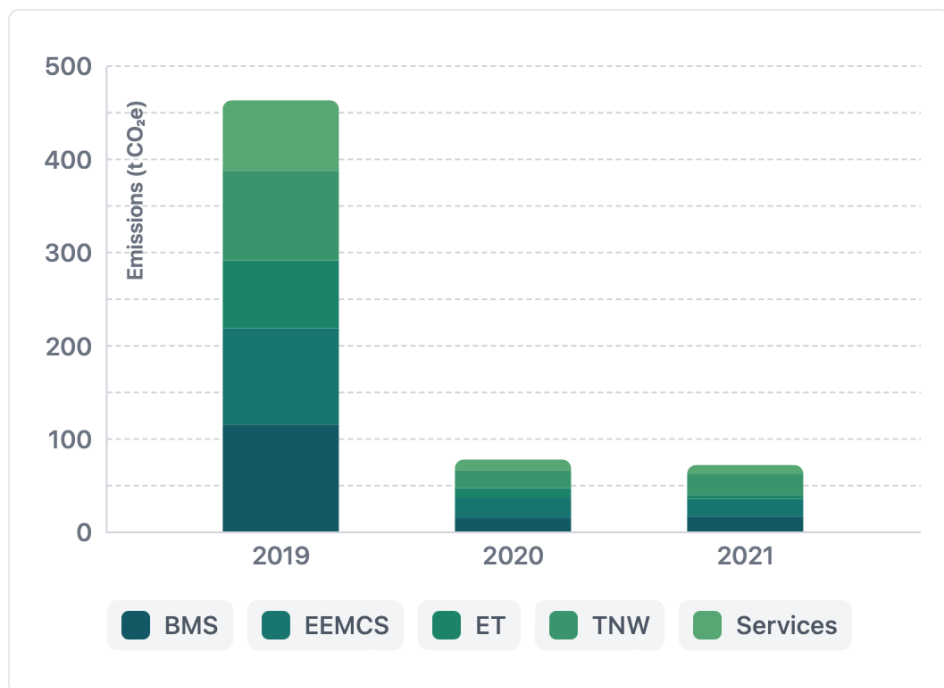
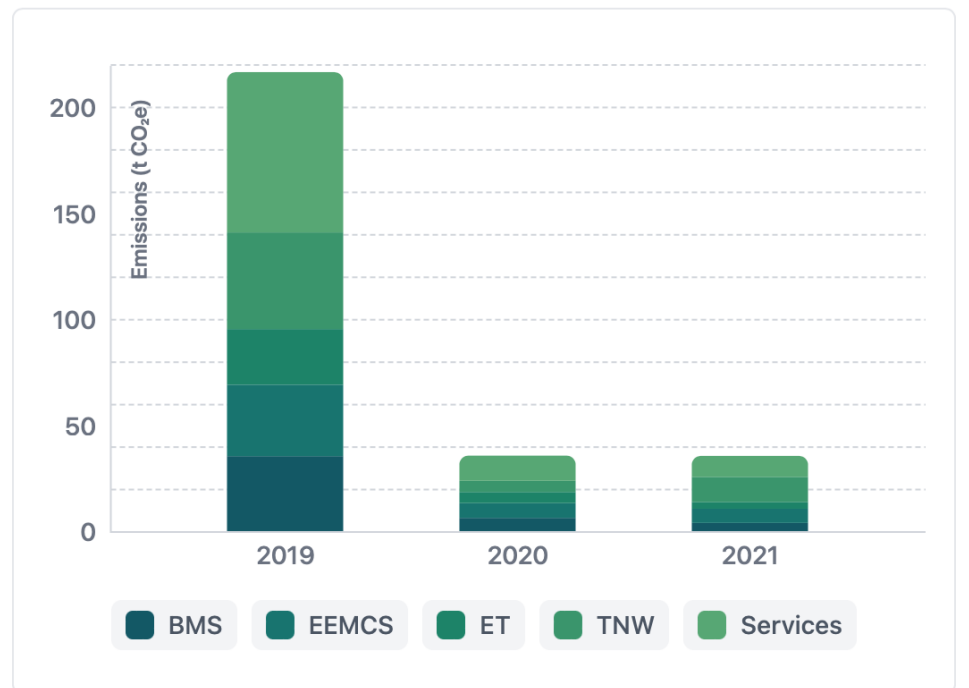
Business Travel

All travel by employees, using all forms of transport is accounted for in scope 3. This includes train travel, car rental, flying and private car use for work. The university aims to reduce flying to locations within a 800 kilometer radius from the university. Although a mobility study and carbon footprint rely on the same data, a carbon footprint accounts for the GHG emissions for flights in three distance categories. For example: a flight with a distance of 700 kilometers or less can occur between locations anywhere in the world, thus making the figures represented here relevant for GHG emissions but not directly for a mobility study. The monitoring of this ambition uses the same data as is used for the CO₂ footprint. But the emission factors used to calculate the CO₂ emissions of flights are categorised slightly differently: short (<700 km), medium (700-2500 km) and long (>2500 km).

CATEGORY	UNIT	2017	2018	2019	2020	2021
Flying short	kg CO ₂ e	0	0	159,864.41	24,897.81	29,406.27
Flying medium	kg CO ₂ e	0	0	463,253.8	78,050.6	72,152.6
Flying long	kg CO ₂ e	0	0	1,982,664.26	464,540.73	94,250.81
Flying short 2014-2018	kg CO ₂ e	72,432.06	233,755.93	0	0	0
Flying medium 2014-2018	kg CO ₂ e	587,257	627,429.6	0	0	0
Flying long 2014-2018	kg CO ₂ e	3,152,627.86	2,883,429.7	0	0	0

CATEGORY	UNIT	2017	2018	2019	2020	2021
Coach rental	kg CO ₂ e	0	0	0	3,534.73	371.31
Car rental	kg CO ₂ e	62,347.12	54,545.04	58,102	11,715.86	10,796.12
Train	kg CO ₂ e	36,924.91	25,056.49	28,515.06	10,150.69	2,734.19
Car expense claims	kg CO ₂ e	220,799.92	220,799.92	200,163.7	83,088.5	84,143.89

Since 2019 we can discern the flight emissions per faculty. The ITC faculty compensates their emissions and thus is accounted as zero-emission. For the other faculties the emissions from shorts distance flights are given to the right, and the medium and long below.



Commuting

Most employees and students travel to the university by car, train or bike. In 2010, a mobility survey was conducted. The CO2 footprint for this section is calculated based on the information from the survey in combination with the adjusted student and employee numbers. For the year 2020 and 2021 the commuting distance has been reduced with 50% due to COVID.

CATEGORY	UNIT	2017	2018	2019	2020	2021
Employees Car	kg CO ₂ e	1,745,819.02	1,782,457.6	1,882,117.38	910,219.64	967,394.22
Employees Train	kg CO ₂ e	42,357.85	43,246.79	45,664.79	24,915.46	8,826.83
Students Car	kg CO ₂ e	2,528,639.96	2,709,205.18	2,849,968.22	1,349,208.12	1,387,821.44
Students Train	kg CO ₂ e	176,237.36	188,822.12	198,632.82	106,090.87	36,375.7

Procurement

The suppliers and contractors of the university were invited to submit CO2 footprint data concerning the services or goods delivered to the university. The various categories in this section and their impact are listed below. Every year the aim is to grow this comprehensive list of suppliers.

CATEGORY	UNIT	2017	2018	2019	2020	2021
Infrastructure	kg CO ₂ e	33,900	39,400	39,020	30,170	15,850
Maintenance	kg CO ₂ e	47,400	53,275	421,400	523,340	374,964.43
Cleaning	kg CO ₂ e	68,900	71,800	68,590	65,147.6	64,032.64
Catering	kg CO ₂ e	29,200	29,200	340,627	21,000	14,000
Hotels	kg CO ₂ e	0	0	0	333,658.26	389,005.57
Landscaping	kg CO ₂ e	167,000	92,900	62,350	3,794.4	-75,632
Movers	kg CO ₂ e	0	0	4,749.73	254.44	671.45
Mobility hired personnel	kg CO ₂ e	34,700	36,500	47,660.8	20,369.7	25,669.8
Lab supplies	kg CO ₂ e	0	0	0	6,244.79	22,264.46
Office supplies	kg CO ₂ e	0	0	0	9,664.5	32,331.44
Printing services	kg CO ₂ e	0	0	68,870	115,127.36	106,568.12
ICT Hardware	kg CO ₂ e	149,900	382,500	0	40,214.2	13,013
Financial Services	kg CO ₂ e	0	0	0	0	208.5

Waste

SUEZ carries out the waste management for the university since 2017 and provides GHG emissions data for the various waste streams of the university. SUEZ works together with consultancy firm CE Delft to provide an accurate estimation of the impact of the waste streams. The amount of waste reduced from 880 tonnes in 2019 to 624 tonnes in 2020, but due to more detailed reporting by SUEZ the CO2 emissions have increased.

CATEGORY	UNIT	2017	2018	2019	2020	2021
Waste	kg CO ₂ e	529,000	607,000	631,000	749,913.93	775,464.2

Water

The GHG emissions of water for this year are based on figures supplied by the water supplier Vitens. The campus-specific study of 2010 that was used previously has been replaced, as these figures better reflect the current situation. From 2019 onwards water consumption of the ITC hotel has been included, this causes an increase in water consumption, as this was not done previously.

CATEGORY	UNIT	2017	2018	2019	2020	2021
Water	kg CO ₂ e	126,193.5	121,468.5	150,033	28,896.84	32,420.21