



PROGRESS AGAINST CARBON EMISSIONS TARGETS 2020-2021



Approved Oct 2021

In July 2019 the University declared a Climate Emergency. In September 2020 the University Executive Board approved a new Sustainability Strategy 2020 - 2030 which reviewed the carbon journey since 2008/9 baseline and projected, based on a 1.5-degree warming scenario, the university aims to reduce its direct and indirect GHGe emissions to be net zero by 2030 from a new baseline year 2018/19 where the total footprint is 21,931 tCO₂e. The University will reduce its emissions by 50% and as a last resort will offset the remaining emissions in credible sector specific offsetting and carbon sequestration schemes. The following tables and charts show our performance against our overarching carbon emissions targets and year on year comparison. The University measures and reports on carbon emissions in three ways:

1. Absolute emissions

Scope 1 & 2 absolute emissions* (tCO₂e) increased 12% between 2019-20 & 2020-21 but this is still a decline of 2% from the baseline year 2018/19. See figure 1. In absolute terms, the University’s energy consumption of natural gas and electricity increased from 15,157 MWh in 2018/19 to 16,380MWh in 2020-21, representing an 8% absolute increase in energy consumption during the period. To achieve Net Zero against carbon emission targets, energy will need to reduce on average by 8.4% against the 2018/19 baseline year. Heating/gas carbon emission baseline year figure of 1,782 CO₂e will need to reduce an average of 149 GHGe tonnes per annum during the life of the strategy. Electricity carbon emission baseline year figure of 1,398 GHGe will need to reduce on average of 117 GHGe tonnes per annum. We are clearly failing to meet our targets. The year was slightly warmer with 4% fewer degree-days. Covid has had an effect and we have had to increase air flows in classrooms and by keeping windows open gas consumption and electricity consumption to run air movement systems at a higher rate have both increased.

Fleet carbon emissions decreased 58.5% from last year; and 71% down from our baseline, 2018/19. Covid has obviously been a hugely significant factor in helping to reduce our fleet absolute emissions over the first two years of setting these stretching targets.

2. In relation to the number of students and staff at the University (tCO₂e/FTE and kWh/FTE)

There has been a 9% decrease in the number of students and staff full-time equivalent (FTE) since 2018/19. In 2009-2010, the University had a space energy intensity of 288 kWh/m² GIA which reduced to 171 kWh/m² GIA by 2019-2020, representing a 41% improvement indicating carbon reduction measures implemented throughout the estate are working. However, if we look at just the last two years the changes are less impressive. We have decreased our electricity emissions by 26% since the base year 2018-19 and just 6% change last year. If we look at gas emissions these increased by 33% last year and 35% since the base year, due primarily to open windows and increased heating due to Covid.

3. In relation to university buildings – floor space (tCO₂e/sqm and kWh/sqm)

There has been a very minimal 1% increase in the size of the estate gross internal area (GIA) m² since last year and a 1.1% increase since the base year. We have 81,904 square metres of floor space on 3 major campuses. Scope 1 & 2 emissions reduced just 2% since the base year and increased 12% since last year.

Scope 3 indirect carbon emissions

Scope 3 emissions* have decreased by 10% since last year, and 26% from the base year (2018/19). This is due to much reduced travel activity due to Covid for both business use and staff and student commuting. We have produced less waste and purchased fewer items. See figures 1 & 2 below. Full details are shown in the tables below. Procurement emissions are calculated using the HE sector [HESCET](#) tool

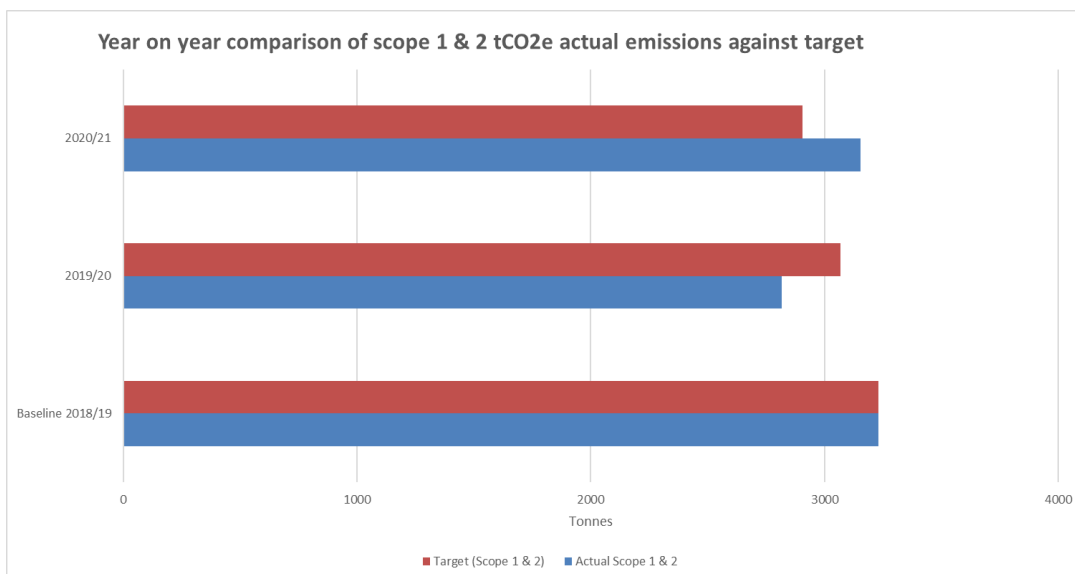


Figure 1: Year on year comparison of scope 1 & 2 carbon emissions (tCO2e) against target of 50% reduction from 2018/19 base year

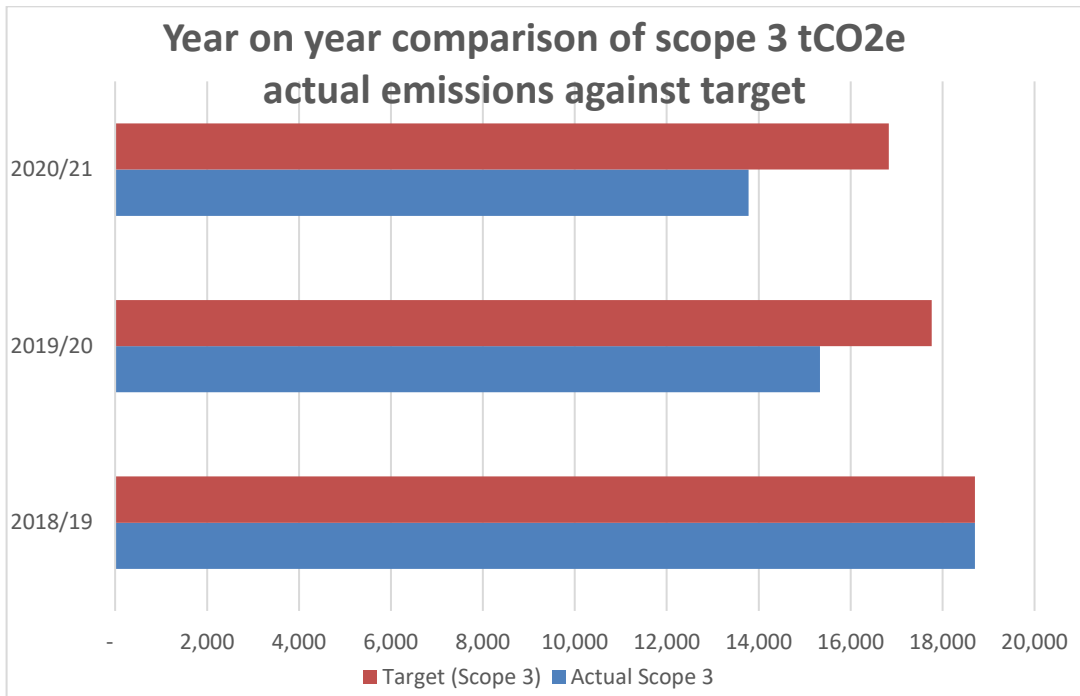


Figure 2: The graphs above show the university indirect (scope 3) carbon emissions tCO2e. Year on year comparison of carbon emission targets against our actual absolute emissions against target of 50% reduction from 2018/19 base year.

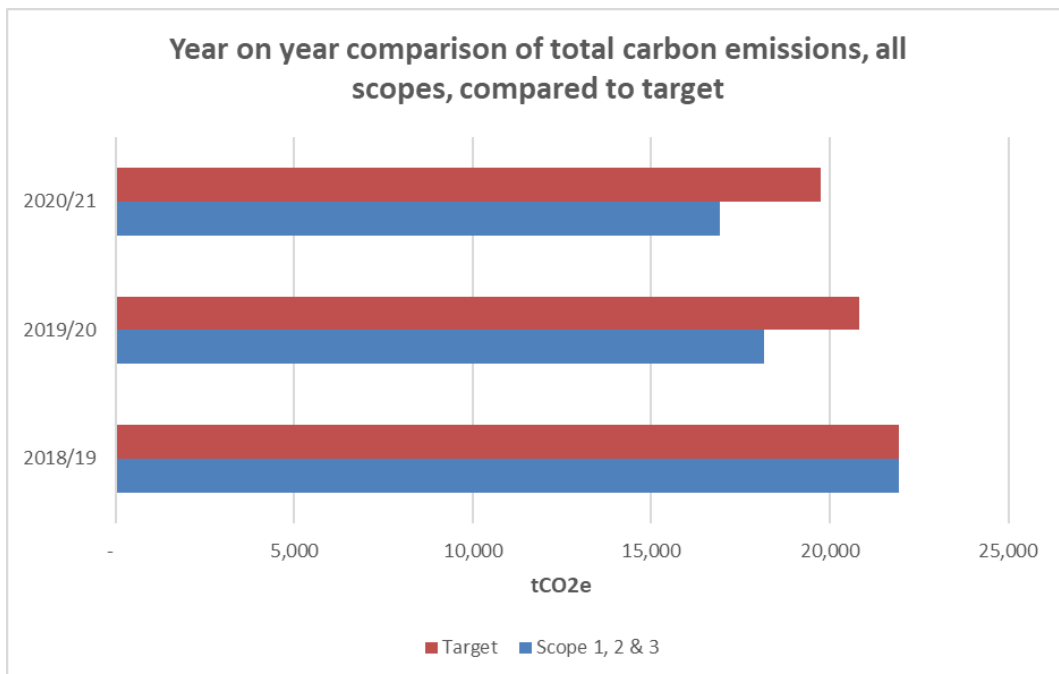


Figure 3: The graph above shows the university total carbon footprint for all scopes direct (scope 1 & 2) and indirect (Scope 3) carbon emissions. Year on year comparison of carbon emission targets against our actual absolute emissions against target of 50% reduction from 2018/19 base year.

Key: **RED** - does not meet target **AMBER** - needs monitoring **GREEN** - meets the target **GREEN★**- exceeds the target.
 FTE = staff and students, GIA = Gross Internal Area.

Scope 1, 2 & 3 total emissions tCO₂e

	Baseline 2018-19	2019-2020	2020-21	Progress against target 5% reduction in tCO ₂ e from 2019/20 baseline	KEY
Actual	21,931	18,149	16,935	6.7% decrease from last year. Decrease by 23% since baseline	GREEN
Target	21,931	20,834	19,738		

Scope 1 and 2 total emissions tCO₂e

	Baseline 2018-19	2019-2020	2020-21	Progress against target 5% reduction in tCO ₂ e from 2019/20 baseline	KEY
Actual	3,230	2,817	3,154	11.95 % increase from last year and 2% decrease from baseline gas consumption being the main driver	AMBER
Target	3,230	3,069	2,907		

Electricity Generation emissions tCO₂e. Conversion factor = 0.21233

	Baseline 2018-19	2019-2020	2020-21	Change from last year	Key
Annual	1,398	1,059	947	Decreased by 10.57% from 2019-20	GREEN
Per FTE	0.1503	0.12	0.11	Decreased by 6.37% from 2019-20	GREEN
Per GIA	0.0172	0.01	0.01	Unchanged from 2019-20	AMBER

Gas emissions tCO₂e. Conversion factor = 0.18316

	Baseline 2018-19	2019-2020	2020-21	Change from last year	Key
Annual	1,782	1,719	2,183	Increased by 27.01% from 2019-20 Gas consumption has increased due to Covid requirements for windows to be open.	RED
Per FTE	0.1915	0.19	0.26	Increased by 32.97% from 2019-20	RED
Per GIA	0.0220	0.021	0.027	Increased by 25.87% from 2019-20	RED

Fleet emissions tCO₂e. Conversion factor = Diesel – 2.51233, Petrol – 2.70553

	Baseline 2018-19	2019-2020	2020-21	Change from last year	Key
Annual	42.44	30.00	12	Decreased by 58.49 % from 2019-20	GREEN

F Gas emissions tCO₂e

	Baseline 2018-19	2019-2020	2020-21	Change from last year	Key
Annual	0	1	3	Increase by 140.77% from 2019-20	RED

Scope 3 Emissions

Scope 3 Total emissions tCO₂e

	Baseline 2018-19	2019-2020	2020-21	Progress against target 5% reduction in tCO2e from 2019/20 baseline	Key
Annual	18,701	15,322	13,781	10% decrease from last year. Decrease by 26% since baseline	GREEN

Electricity Distribution

Transport & Distribution emissions tCO2e. Conversion factor = 0.01879

	Baseline 2018-19	2019-2020	2020-21	Change from last year	Key
Annual	119.0	91.00	84	Decreased by 8.01% from 2019-20	GREEN
Per FTE	0.013	0.010	0.010	Decreased by 3.7% from 2019-20	GREEN

Water

emissions tCO2e. Conversion factor = 0.14900

	Baseline 2018-19	2019-2020	2020-21	Change from last year	Key
Annual	22.6	21	6	Decreased by 71.10% from 2019-20	GREEN
Per FTE	0.0024	0.0023	0.001	Decreased by 69.74% from 2019-20	GREEN

Wastewater

emissions tCO2e. Conversion factor= 0.27200

	Baseline 2018-19	2019-2020	2020-21	Change from last year	Key
Annual	46.4	43	11	Decreased by 74.09% from 2019-20	GREEN
Per FTE	0.0050	0.0048	0.0013	Decreased by 72.88% from 2019-20	GREEN

Waste & Recycling

emissions tCO2e – Conversion factor 21.294

	Baseline 2018-19	2019-2020	2020-21	Change from last year	Key
Annual	9.1	6	6	Decreased by 5.66% from 2019-20	GREEN
Per FTE	0.00098	0.00008	0.00007	Decreased by 6.5% from 2019-20	GREEN

Hire Car

emissions tCO2e. Conversion factor = 0.1714

	Baseline 2018-19	2019-2020	2020-21	Change from last year	Key
Annual	49.5	23	1	Decreased by 97.43% from 2019-20	GREEN
Per FTE	0.0053	0.0026	0.0001	Decreased by 97.31% from 2019-20	GREEN

Taxi

emissions tCO2e. Conversion factor = 0.20826

	Baseline 2018-19	2019-2020	2020-21	Change from last year	Key
Annual	3.2	3.5	1	Decreased by 75% from 2019-20	GREEN
Per FTE	0.00034	0.0004	0.00010	Decreased by 74% from 2019-20	GREEN

Rail travel emissions tCO₂e. Conversion factor = 0.03549

	Baseline 2018-19	2019-2020	2020-21	Change from last year	Key
Annual	18.3	13	0.3	Decreased by 97.85% from 2019-20	GREEN
Per FTE	0.00196	0.001468	0.000033	Decreased by 97.75% from 2019-20	GREEN

Air travel emissions tCO₂e. Conversion factor = Domestic 0.24587, Short-haul 0.15353 and Long-haul 0.19309

	Baseline 2018-19	2019-2020	2020-21	Change from last year	Key
Annual	395	176	19	Decreased by 89% from 2019-20	GREEN
Per FTE	0.040	0.02	0.002	Decreased by 89% from 2019-20	GREEN

Commuter travel emissions tCO₂e. Distance calculated by modal split and Defra conversion factors by vehicle, vehicle type based on survey data.

	Baseline 2018-19	2019-2020	2020-21	Change from last year	Key
Annual	8190	4552	5519	Increased by 21.24% from 2019-20	RED
Per FTE	0.88	0.51	0.65	Increased by 26.92% from 2019-20	RED

Grey Fleet emissions tCO₂e. Conversion factor = 0.16843

	Baseline 2018-19	2019-2020	2020-21	Change from last year	Key
Annual	42.4	37.7	5	Decreased by 86.60% from 2019-20	GREEN
Per FTE	0.0046	0.0042	0.0006	Decreased by 85.98% from 2019-20	GREEN

Coach travel emissions tCO₂e. Conversion factor = 0.45896

	Baseline 2018-19	2019-2020	2020-21	Change from last year	Key
Annual	21.5	10.5	3	Decreased by 74.29% from 2019-20	GREEN
Per FTE	0.002	0.001	0.0003	Decreased by 73.08% from 2018-19	GREEN

Procurement emissions tCO₂e using [HESCET tool](#)

	Baseline 2018-19	2019-2020	2020-21	Change from last year	Key
Annual	9784	10,355	8,127	Decreased by 21.52% from 2019-20	GREEN
Per FTE	1.05	1.17	0.96	Decreased by 17.84% from 2019-20	GREEN

Full Time Equivalent student and staff numbers

	Baseline 2018-19	2019-2020	2020-21
FTE Stu/Staff	9304	8863	8466
Floor space GIA m ²	81,172	81,172	81904

Source: <https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting>

*Notes: The World Resource Institute developed a classification of emissions sources around 3 scopes. Scope 1 emissions are direct emissions from the combustion in owned boilers and vehicles, scope 2 accounts for emissions from the generation of purchased electricity consumed by an organisation, and scope 3 is all other indirect emissions which are a consequence of the activity of the organisation - for example procurement and commuting. Degree Days account for the effect of weather on measuring energy management. Last year it was cold winter with total degree days of 2,164, against five-year average of 1,987-degree days.

In September 2020 the University Executive approved a new [Sustainability Strategy 2020 - 2030](#) - and the university aims to reduce its direct and indirect GHGe emissions to be net zero by 2030 from a new baseline year 2018/19. A review of the Carbon Management Strategy in April 2014 increased the scope 3 envelope. The emissions factors are for all greenhouse gases and follow Defra reporting guidelines.

**Wastewater figure is based on fascial consumption and does not include grey water, which is not metered.