Glasgow Caledonian University

University for the Common Good

Carbon Footprint Report: 2019-20

16 March 2021

Executive Summary

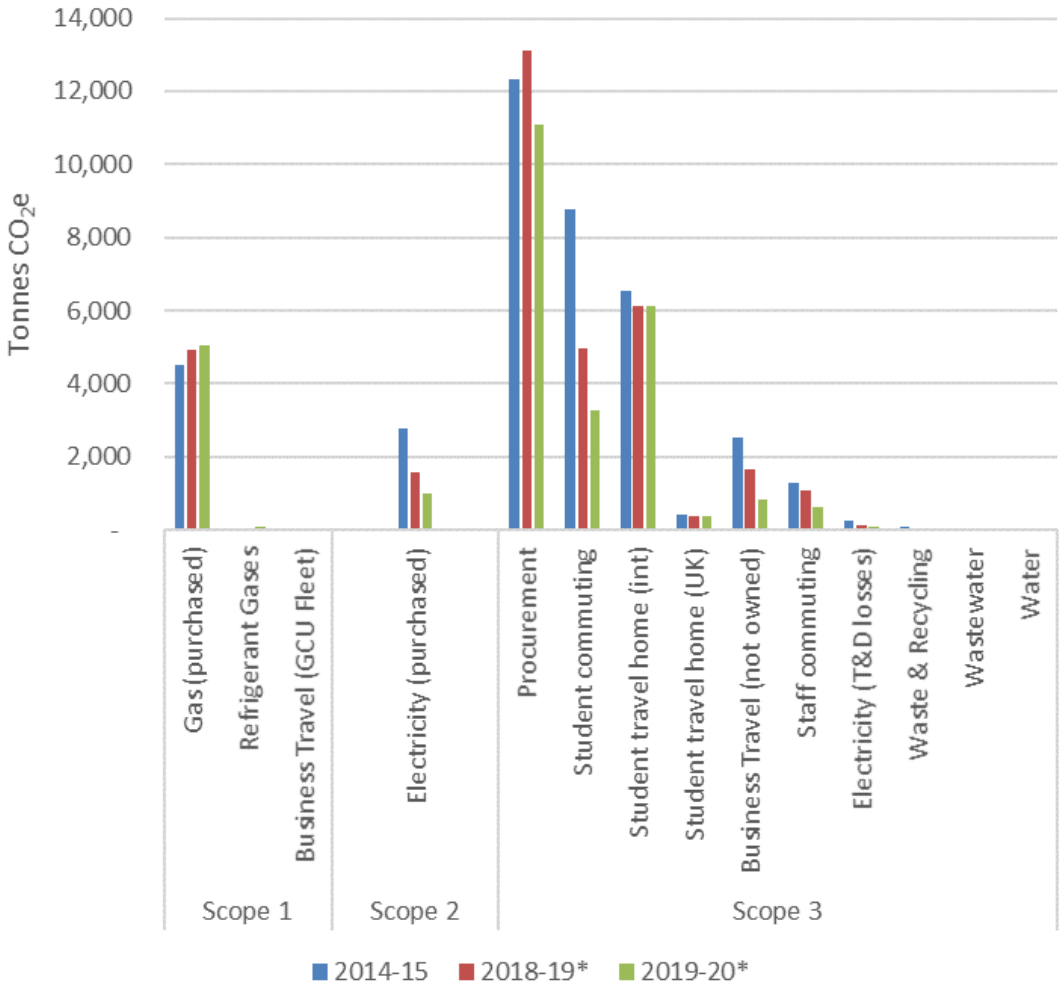
Glasgow Caledonian University (GCU/the University) reports its greenhouse gas emissions (GHG) annually, with reports used to improve performance and meet compliance obligations.

The present report covers emissions for the 2019-20, which was an exceptional year due to the significant disruption caused by the coronavirus pandemic. The report focuses on how the University's GHG emissions have changed, the permanence of change and whether lessons from the shift to remote working can be adopted to sustain potential reductions.

The overall reporting approach is unchanged, with the University following the GHG Protocol Standards and adhering to the principles of: accuracy, completeness, consistency, relevance and transparency. The reporting boundaries (operational control) and methodology for the 2019-20 GHG emissions inventory remaining the same, although there are three material changes that need to be highlighted: a new methodology for estimating emissions from procurement; the inclusion of emissions from UK domiciled students' travel home; limited business travel data due the University's travel management company ceasing to trade.

The most significant of these is a new, more accurate tool for procurement emissions which generates higher emissions for procurement than the previous tool. Because of this change, the ability to directly compare historic emissions form procurement has been lost. The inclusion of UK domiciled student travel home (retrospectively applied to previous GHG inventories) provides a complete picture of travel emissions and, compared to the new methodology for procurement emissions, only has a negligible impact on reported emissions. The implication of the lack of travel data from the University's TMC is a reduction in the accuracy of emissions from business travel.

In 2019-20 GCU's GHG emissions inventory was 28,549 tonnes CO_2e, 16% lower than in 2018-19 and with a downward trend evident across all emission groups (-20% for travel, -15% for procurement and -8% for energy).



The 16% reduction in the University's GHG emissions is welcomed (relative to 2018-19), but it is noted that it is likely to be temporary, as emissions will rebound once the pandemic restrictions are lifted and on-campus operations return to pre-pandemic levels.

Notwithstanding this, there is potential to limit the extent of the rebound by continuing to use some of the new work practices adopted to cope with pandemic.

Contents

Introduction

Glasgow Caledonian University (GCU/the University) reports its greenhouse gas emissions (GHG) annually and through its Environmental Management System uses them to benchmark performance, target improvements and assess progress towards environmental commitments and meet compliance obligations.

The present report covers emissions for the 2019-20 Academic Year, which was an exceptional year due to the significant disruption caused by the coronavirus pandemic and the shift to remote operations. This shift and the curtailment of on-campus activity is likely to have both a short and long-term implications for the University's carbon footprint. Another factor that potentially makes the 2019-20 reporting period exceptional is the release of an updated tool for reporting (supply chain) emissions.

This report focuses how the University's GHG emissions have changed since the last reporting period, the permanence of change and whether there are lessons that can be adopted from the new working practices to sustain potential reductions in GHG emissions.

Data & Methodology

GCU reports its GHG emissions according to the GHG Protocol Standards[1] and adheres to the reporting principles of: accuracy, completeness, consistency, relevance and transparency. The reporting boundaries (operational control) and methodology for the 2019-20 GHG emissions inventory are the same as those used in previous reporting periods.

Whilst the general approach and datasets have not changed (Table 1), the following three material changes are noted: new methodology for estimating emissions from procurement; the inclusion of emissions from UK domiciled students' travel home; limited business travel data (due the University's travel management company ceasing to trade). Further information on these changes is provided below.

In addition to the above changes, the reporting materiality threshold was revised to 1% (from 5%) as part of the review of GCU's reporting arrangements and to harmonise them with other reporting standards (e.g. ISO 14064:2006).

It is also noted that although the data and calculations in this report were not subject to independent verification or quality assurance, they benefited from a peer review exercise with Glasgow City College (in collaboration with the Environmental Association of Universities & Colleges – Scotland).

[1] Greenhouse Gas Protocol – Corporate Standard and Corporate Value Chain (Scope 3) Standard.

Emission Category	Scope	Emission Activity	Data quality observations
Organisation's buildings	1	Gas consumption	High quality data derived from gas meter readings.
	1	Refrigerant Gases	High quality data derived from contractors measurements of systems' fluorinated gas charge.
Organisation's vehicles	1	Business travel (own fleet)	High quality data derived from fuel card reports.
Purchased electricity	2	Electricity (Nat. Grid) Total	High quality data derived from electricity meter readings.
Purchased Goods & Services	3	Water	High quality data derived from water meter readings.
Purchased Goods & Services	3	Procurement - HEPA tool (formerly HESCET tool)	Low-medium quality data. Derived from spend data on imported goods using regional emission factors. See further commentary below.
Other fuel & energy rel. activities	3	Electricity (transmission & distribution losses)	High quality data derived from electricity meter readings.
Waste Generated in Operations	3	General Waste & recycling	Medium-high. Data for Glasgow derived from contractors' weighing systems. Other locations based on historic estimates.
	3	Wastewater	High quality data derived from water meter readings. Assumed 95% of purchased water becomes wastewater.
Business travel	3	Travel (business – not owned)	Low. Derived from purchase orders because the University's Travel Management Company ceased trading.
Employee commuting	3	Travel (commuting – staff)	Medium quality data derived from staff records and triennial travel surveys.
	3	Travel (commuting – students)	Medium quality data derived from student records and triennial travel surveys.
	3	UK domiciled students – travel home.	Low quality data derived from student records and a survey and interviews.
	3	International students – travel home.	Low quality data derived from student records and a historic survey and associated assumptions on frequency of travel.

Table 1 Observations on data quality for the University's emissions inventory.

Procurement Emissions - New Methodology

GCU has included Scope 3 emission from procurement in its GHG inventories since 2014-15 using a third-party tool[2]. Although these emissions have been included, their use has been caveated due to reservations about outdated emission factors.

[2] GCU uses the Higher Education Supply-Chain Emissions Tool (HESCET) provided by APUC to estimate emissions from procurement.

To address these (and other concerns), the tool was subject to a full redesign for the 2019-20 reporting period with the introduction of the following changes (elaborated further in the release note included as Appendix A):

- Greater granularity – Spend categories increased from 75 to 311.
- Emission factors now incorporate impact of other GHG (in addition to Carbon).
- Emissions based on 16 world regions, rather than the previous two (UK and rest of the world).

These changes provide a more accurate representation of supply-chain emissions. However, they also raise a number of additional issues:

1. Emissions are higher than when calculated using the old tool (in some cases doubling[3] - Figure 1), which unintentionally under-reported emissions.
2. Direct comparison with historic GHG inventories is not possible because the new tool is based on a completely different spend classification system.

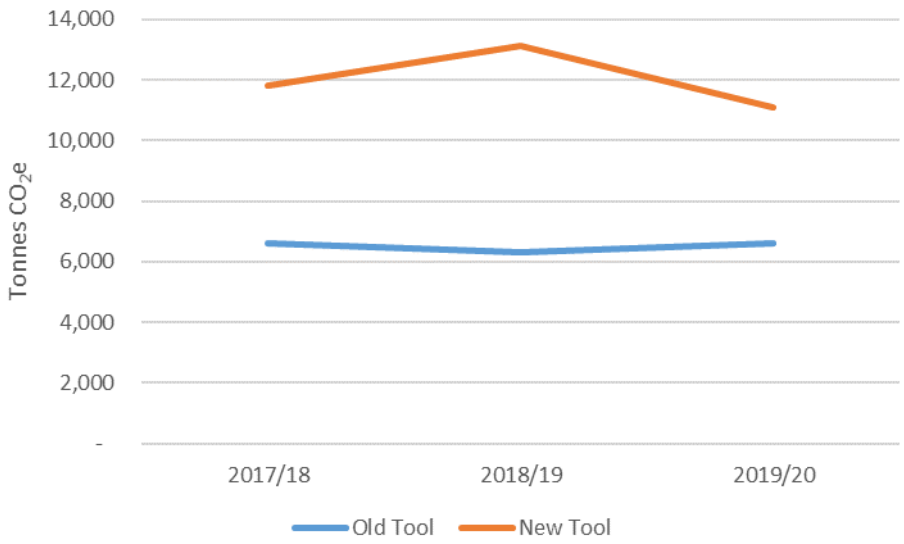


Figure 1 Comparison of procurement (scope 3) emissions based on the old and new tools for spend categories that University does not have primary data for.

The change in methodology (and the issues arising from it) would typically warrant a review of the University's baseline, but due to the impact of the pandemic on emissions in other categories, this would risk establishing an artificially low baseline. It is therefore proposed that until operations return to the pre-pandemic operating model, when the issue of re-baselining should be reviewed, 2019-20 is used as the baseline for emissions from procurement activity, whilst all other categories are baselined to 2014-15.

[3] As with previous years, procurement emissions from suppliers that provide more accurate primary data are excluded and listed separately.

Whilst these changes represent an improvement, the methodology retains an element of insensitivity that does not reflect institution-level procurement decisions and only reductions in spend will result in emission reductions. Notwithstanding this, the new methodology still provides an excellent foundation for engaging the University's supply chain to understand how individual suppliers are responding to the climate emergency.

Additional Category - UK Domiciled Student Travel Home

The other material change is the inclusion of emissions from UK domiciled students' travel home. The University has historically included an estimate of international student travel home, but the exclusion of emissions from UK domiciled student travel home (due to the lack of a useable methodology) meant that GCU's GHG inventories did not fully reflect the climate impact from student travel home.

A placement project with a student SCEBE's Environmental Management programme during Trimester A in 2019-20 provided an opportunity to address this gap.

The methodology is based on 'home-travel profiles', derived from responses to a survey into students' non-term addresses (the outward postcode), frequency of travel home and mode of transport. To estimate emissions from UK domiciled student travel home the profiles are extrapolated to the wider student population[4] (using outward postcodes for non-term addresses). Future Travel Surveys will be used to keep the 'home-travel profiles' update.

The new methodology was used to retrospectively estimate emissions from UK domiciled students travel home in the GHG inventories to and including 2014-15.

Data Availability - Business Travel

The final material change in the 2019-20 GHG inventory is the absence of business travel data provided by the University's Travel Management Company (TMC) who ceased trading towards the end of the reporting period[5].

As a result, emissions from business travel had to be estimated using journey details on Purchase Orders, which are less accurate than the data provided by the TMC[6]. Whilst the absence of TMC data potentially reduces the accuracy of the University's GHG emissions, the shortfall should be temporary as the process to appoint a new TMC is underway.

Inventory & Emissions

A summary of GCU's emission inventory for the reporting periods since 2014-15 is provided in Figure 2 and summarised in Table 2. A breakdown by activity category is provided in Figure 3 and is followed by a summary of key changes.

[4] Students that go home every day (i.e. Strathclyde region) were excluded because their 'travel home' emissions are included in commuting emissions.
[5] Historically, travel data has been provided for the whole after the end of the financial year.
[6] For example, often Purchase Orders don't include full journeys details such as segments travelled or number of passengers.

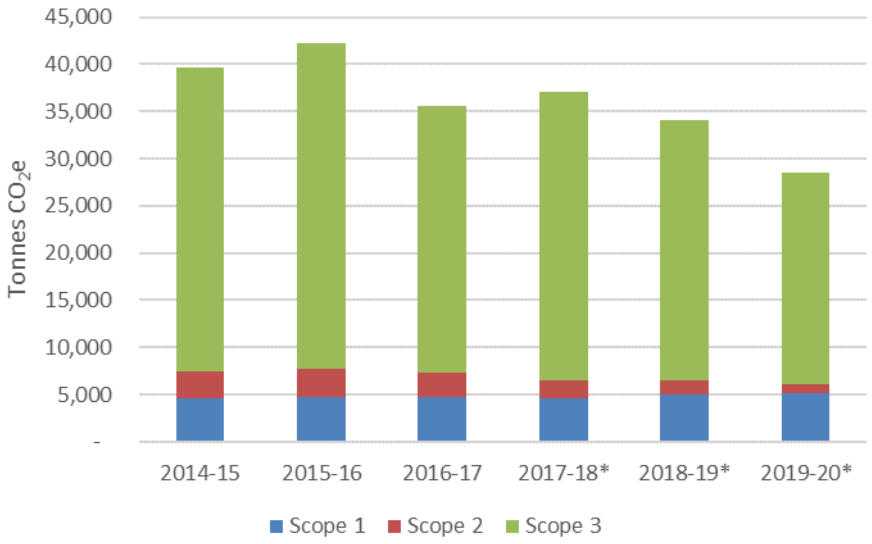


Figure 2 Emissions (tonnes CO_2e) at GCU by scope (the asterisk (*) denotes years where the new methodology for procurement emissions was used).

Scope	Description	Tonnes CO_2e					
		2014-15	2015-16	2016-17	2017-18*	2018-19*	2019-20*
1	Direct combustion of fuels and other fugitive emissions.	4,598	4,794	4,745	4,589	4,974	5,136
2	Electricity from the National Grid	2,784	2,902	2,613	1,881	1,576	998
3	Other up- and downstream activities out-with GCU's operational control	32,232	34,509	28,200	30,625	27,503	22,415
Total		**39,615**	**42,205**	**35,557**	**37,095**	**34,053**	**28,549**

Table 2 Emissions (tonnes CO_2e) by scope (the asterisk (*) denotes years where the new methodology for procurement emissions was used).

In 2019-20 GCU's GHG emissions inventory was 28,549 tonnes CO_2e, 16% lower than in 2018-19 and with a downward trend evident across all scopes (including scope 3 since 2017-18 the furthest back the new procurement methodology could be used to re-cast historic emissions). Whilst the trend is downward, it is likely that a significant contributor were the restrictions introduced in response to the pandemic in March 2020 (elaborated on below). An analysis using 14 activity categories in GCU's GHG inventory confirm this trend (Figure 3). The full GHG emission inventory is provided as Appendix B.

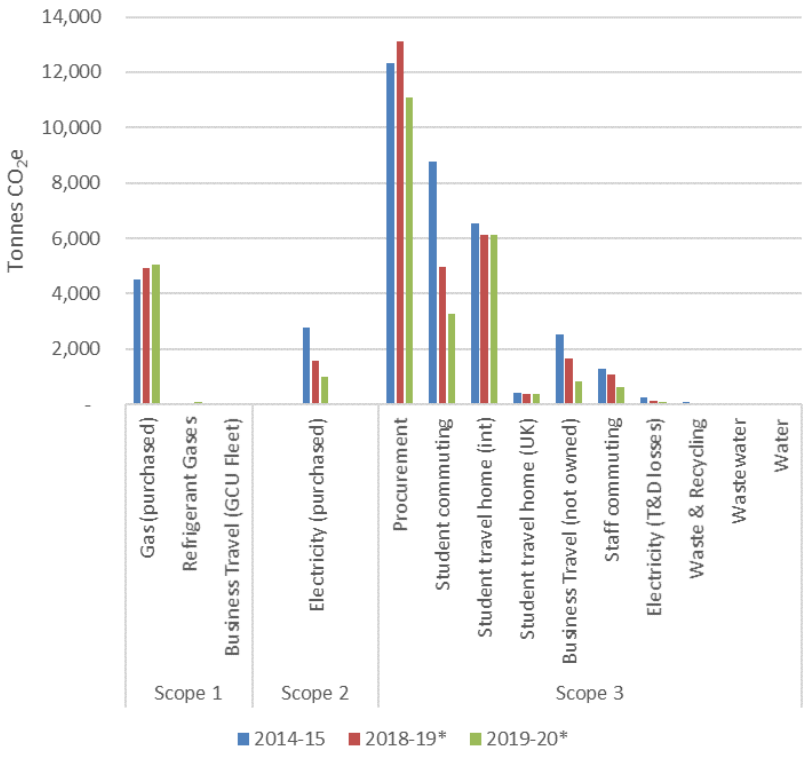


Figure 3 Emissions (tonnes CO_2e) by activity (the asterisk (*) denotes years where the new methodology for procurement emissions was used).

To simplify the discussion of how GCU's GHG inventory has changed, the 14 emission categories were aggregated into four, cross scope thematic groups (Figure 4): travel, procurement, energy and other. Travel, Procurement and Energy represent over 99% of reported emission.

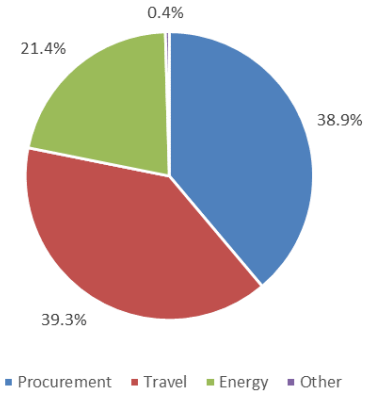


Figure 4 Emissions (%) by emission activity grouping.

The sections that follow provide an overview of how emissions have changed and potentially what factors are behind this change.

Trends & Observations

This sections elaborates on how emissions have changed in the three emissions groups that represent 99% of the University's GHG inventory.

Travel

Travel was responsible for 11,219 tCO_2e or 39.3% GCU's GHG inventory. In 2019-20 emissions from travel were 20% lower than in 2018-19. Travel (Figure 5) includes emissions from: GCU's fleet (<1%); other (not owned) business travel (7%); staff and student commuting (6% and 29% respectively); and UK domiciled and international student travel home (3% and 55% respectively). UK domiciled travel home is a new category (retrospectively added to historic inventories) that completes our understanding of travel emissions.

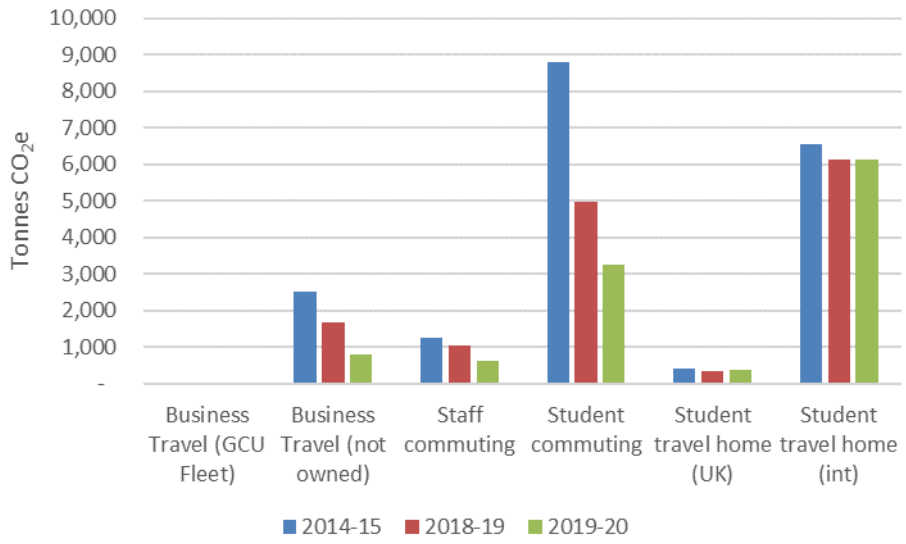


Figure 5 GHG emission by travel activity

GCU's Fleet is not a significant source of emission in University's GHG inventory, emitting 5 tCO_2e in 2019-20. A 38% reduction between 2018-19 and 2019-20 is attributed to curtailment in the use of the fleet due to the coronavirus pandemic. It currently not possible to determine whether the pandemic will result in long-term emissions changes from GCU's fleet.

815 tCO_2e (7% of reported emissions) were emitted other **Business Travel (not owned)** at GCU. This category includes emissions from flights, rail travel, hired and private vehicle use (grey fleet), taxis and coaches (Figure 6). 92% of emissions are attributable to air travel (combined). As with other travel, a 50% reduction in emissions between 2018-19 and 2019-20 is attributed to the pandemic. Whilst the pandemic restricted business travel, the adoption of new working practices has potential to reduce future demand for business travel and result in significant reductions in emissions relative to 'normal' years (e.g. 2018-19).

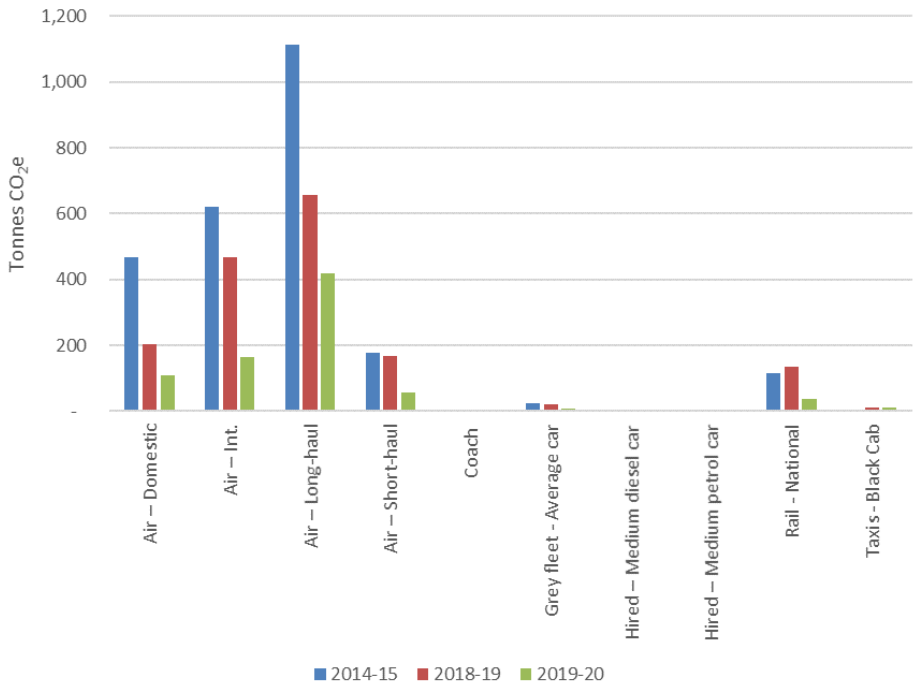


Figure 6 GHG emissions from other business travel (i.e. using assets not owned by GCU).

Staff and student commuting account for 7% and 29% of travel emissions (respectively) and emitting 629 tCO_2e and 3,259 tCO_2e each (respectively). Between 2018-19 and 2019-20 emissions from staff and student commuting fell by 40% and 34%, respectively. The reduction is attributed to the switch to remote working/learning due to the pandemic. It currently not possible to determine whether the pandemic will result in long-term changes how often staff and students need to be on campus and what impact this'll have on commuting emissions.

Finally, **UK domiciled and international student travel home** are responsible for 380 tCO_2e and 6,131 tCO_2e in 2019-20 (3% and 55% of total travel emissions, respectively). There was no significant change in emissions in this category compared to the previous reporting period because it was assumed that all students returned home. It is unlikely that once on-campus activity resumes, the pandemic will have a long-lasting impact on emissions from student travel home.

Procurement

Procurement activity in 2019-20 was responsible for 11,092 tCO_2e or 38.9% GCU's GHG inventory (excluding emission categories the University has primary data for). Although procurement emissions for 2019-20 were 15% lower than 2018-19, the causes of the reduction are unclear because spend was comparable. There is insufficient information to explore the reasons behind this change. It is also unclear whether there will be any long-term impact from the pandemic on emissions from procurement activity.

Energy

In 2019-20 energy use was responsible for 6,113 tCO_2e or 21.4% GCU's GHG inventory. Gas (purchased), used in the Energy Centre and for space heating accounted for 82% of energy emissions, electricity (purchased) for 16% and electricity transmission and distribution losses for 1%. Although overall there was an 8% reduction in emission from energy, there was a 2% increase in gas (purchased) and a 37% decrease in electricity (purchased). These changes reflect ongoing efforts to optimise the Energy Centre that made the University almost self-sufficient for electricity during the pandemic. It is likely that post pandemic, gas emissions will remain high because of ongoing optimisation of the Energy Centre, whilst the amount of purchased electricity should be lower than the pre-pandemic levels (because a higher proportion of the electricity used on campus will be generated by the Energy Centre).

Closing Remarks

2019-20 was exceptional for a number of reasons: the coronavirus pandemic forcing the University to switch to remote working; key suppliers ceased trading; and a new methodology was released for estimating emissions from procurement activity.

These changes resulted in a 16% year-on-year reduction in emissions compared to 2018-19 (even when the higher, more accurate emissions for procurement were included). However, whilst the reduction is welcomed, it is noted that it is likely to be temporary, as emissions will rebound once the pandemic restrictions are lifted and on-campus operations return to pre-pandemic levels.

Normally, the changes in the methodology for estimating procurement emissions would warrant a re-baseline of the University's GHG emissions inventory. However, because of the curtailment of on-campus activity and the prospect of emissions rebounding after the pandemic, it is recommended that until operations return to the pre-pandemic levels, when the issue of re-baselining should be revisited, 2019-20 is used as the baseline for emissions from procurement activity and 2014-15 for all other categories.

Whilst the new methodology/tool for procurement emissions created some reporting challenges, it also creates a unique opportunity for engaging the University's supply chain and explore what practical measures they are taking to cut their operational and product emissions.

Appendix A – Procurement Emissions Tool Release Note

Updated Scope 3 Emission Data & HESCET – Context Information (Feb 2021 - Scotland)

Background

For many years, the HESCET tool (using embedded DEFRA conversion factors, until now using conversion factors based on data around a decade ago) has been used to calculate the Scope 3 (supply chain) emission across UK HE. This tool was originally developed with funding from HEFCE with the data processing managed by the 6 UK regional purchasing consortia. The tool was owned and controlled by HEFCE, it then passed to the recently established (UK Gov) Office for Students (OfS). The tool has not been refreshed with updated carbon equivalent data for many years (as it was owned by HEFCE, the sector itself did not have the power to update it). With the brief of OfS being different to HEFCE, the tool was therefore passed recently to the ownership of HEPA - the Higher Education Procurement Association (part of the British Universities Finance Directors Group).

Recent Activity

HESA had stated / states that the submissions for climate data for the 2019/20 AY (deadline April 2021) should be based on the 2020 DEFRA (published March 2020) conversion factors so a joint group was formed by HEPA and EAUC (with representatives from HEPA, EAUC, and from procurement and sustainability teams in the sector across the UK, as well as reps from purchasing consortia) to update the HESCET tool.

The group worked directly with the team in the University of Leeds that are contracted to calculate the carbon factors on behalf of DEFRA so that they would be able to both gain a good understanding of how they work and be able to access the data as soon as it was available. The team at Leeds advised that substantial changes to the calculation methodology had recent been put in place that would significantly change, significantly increasing in most cases, the carbon equivalent figures being reported due to various aspects including:

- Previously there were 75 DEFRA codes, now there are 311, this is to provide a better granularity of emission data across commodities.

- Much more (then when the old factors were calculated) is understood about the impact of other gases (beyond carbon) such as methane in the role they play in climate changes so these impacts have been included.

- Previously the data was based on two global regions of source, the UK and the rest-of-the-World, the new factors break the World into 16 regions so that different emissions caused by production in the different regions can be more accurately accounted for.

- Due to most of the largest emission goods that HE buy (ICT, Furniture, Lab equipment, Lab consumables, various singe use products, as well as steel used in construction) now being purchased from China (and India often in the case of steel), where virtually all electricity is generated from coal (versus higher levels of renewable energy being factored into the old rest-of-the-World region figures in past years), we were advised to expect huge increases in the carbon equivalent figures (but which are now much more accurate) for these commodities, versus the same spend calculated using previous versions of the HESCET tool / previous conversion factors, with some increases expected well in excess of 100%.

The HESCET tool can be a difficult tool to operate and it is cumbersome to examine more than one year of data at a time. APUC decided therefore to incorporate the DEFRA conversion factors (using exactly the same data as in the new HESCET tool) into their spend management system and make it available on line to institutions using the customer portal. This provides much more reportability of data, right down to supplier level, and will be a highly useful prioritisation tool, but also allows us to run reports using the new factors but against previous years' spend on a single view / worksheet.

Without this it would be difficult to put the changes into context as if people simply looked at the previous year's HESCET data versus the recent year data, it would look like a huge increase in institutional emissions, whereas seeing all the data in these new reports across 3 years allows any changes to be seen in the correct context, all using the new conversion factors. Institutions may then if they are reporting this data, explain the above and also explain that for example, x under the old HESCET tool is equal to Y in the latest report etc, but despite the higher figures does not necessarily mean there is an increase.

Looking Forward

It is estimated that for HE/FE institutions, that out of their total climate emissions, depending on the institution's activities, between 65% and 80% of its climate emissions will be Scope 3 / caused in their supply chains. These new conversion factors are bringing that into sharp focus.

Global supply chains are unlikely in the short to medium term, to move away from these high-coal based economies, and while APUC and procurement colleagues in institutions, working in partnership with key stakeholder user groups will work to maximise reductions strategies where possible, the most optimal way for the sector to materially reduce its climate impacts therefore is to re-evaluate how it consumes high emission goods and services.

This will include reducing demand (so for example where a research grant provides for new equipment, making a decision not to buy it if existing equipment will suffice for the purpose in hand), making equipment last longer, large scale refurbishment of equipment to extend life, and moving away from purchasing anything for single use unless it is a critical need and there is no re-usable alternative.

Appendix B – GCU full GHG Inventory 2019-20

Emission Category	Scope	Emission Activity	Source	Qty	Qty (U)	EF	EF (U)	EF Source	tonnes CO2e
Organisation's buildings	1	Gas consumption	City Campus	25,756,324	kWh	0.18387	kg CO2e.kWh	Defra: Fuels (Energy gross - CV)	4,735.82
Organisation's buildings	1	Gas consumption	Caledonian Court (P2)	1,594,731	kWh	0.18387	kg CO2e.kWh	Defra: Fuels (Energy gross - CV)	293.22
Organisation's buildings	1	Refrigerant Gases	R134A		kg	1430	kg CO2e.kg	Defra: Refrigerant & Other	-
Organisation's buildings	1	Refrigerant Gases	R410A		kg	2088	kg CO2e.kg	Defra: Refrigerant & Other	-
Organisation's buildings	1	Refrigerant Gases	R404A	6.5	kg	3992	kg CO2e.kg	Defra: Refrigerant & Other	26.07
Organisation's buildings	1	Refrigerant Gases	R407C	43.1	kg	1774	kg CO2e.kg	Defra: Refrigerant & Other	76.46
Organisation's buildings	1	Refrigerant Gases	R22		kg	1810	kg CO2e.kg	Defra: Refrigerant & Other	-
Organisation's buildings	1	Refrigerant Gases	R422D		kg	2729	kg CO2e.kg	Page 12/17 in http://www.gas2010.com/pdfs/I	-
Organisation's vehicles	1	Business travel (owned vehicles)	Petrol		litres	2.16802	kg CO2e.litre	Defra: Fuels	-
Organisation's vehicles	1	Business travel (owned vehicles)	Diesel	1,881	litres	2.54603	kg CO2e.litre	Defra: Fuels	4.79
Purchased Electricity	2	Electricity (National Grid)	Campus	3,451,825	kWh	0.23314	kg CO2e.kWh	Defra: UK electricity	804.76
Purchased Electricity	2	Electricity (National Grid)	C Court (P1)	536,610	kWh	0.23314	kg CO2e.kWh	Defra: UK electricity	125.11
Purchased Electricity	2	Electricity (National Grid)	C Court (P2)	291,006	kWh	0.23314	kg CO2e.kWh	Defra: UK electricity	67.85
Purchased Good & Service	3	Water	All	31,396	m3	0.11	kg CO2e.m3	Scottish Water - Sustainability Report 2019 (pag	3.45
Other fuels & energy relat	3	Electricity (transmission and distribution lossed - Nati	All	4,279,441	kWh	0.02005	kg CO2e.kWh	Defra: Transmission & Distribution (T&D - UK El	85.80
Waste Generated in Opera	3	Waste & Recycling (C&I) - London	Landfill [Est.]		tonnes	458	kg CO2e.tonne	Defra: Waste Disposal (Refuse)	-
Waste Generated in Opera	3	Waste & Recycling (C&I) - London	Mixed Recycling [Est.]		tonnes	21	kg CO2e.tonne	Defra: Waste Disposal (Refuse)	-
Waste Generated in Opera	3	Waste & Recycling (C&I) - London	Combustion [Est.]	7.80	tonnes	21	kg CO2e.tonne	Defra: Waste Disposal (Refuse)	0.17
Waste Generated in Opera	3	Waste & Recycling (C&I) - Campus	Landfill - SAMPRO [Est.]	3.59	tonnes	458.18	kg CO2e.tonne	Defra: Waste Disposal (Refuse)	1.65
Waste Generated in Opera	3	Waste & Recycling (C&I) - Campus	Combustion	44.47	tonnes	21.32	kg CO2e.tonne	Defra: Waste Disposal (Refuse)	0.95
Waste Generated in Opera	3	Waste & Recycling (C&I) - Campus	Mixed Recycling	148.63	tonnes	21.32	kg CO2e.tonne	Defra: Waste Disposal (Refuse)	3.17
Waste Generated in Opera	3	Waste & Recycling (C&I) - Campus	Organic: Food & drink waste Al	31.54	tonnes	10.20	kg CO2e.tonne	Defra: Waste Disposal (Refuse)	0.32
Waste Generated in Opera	3	Waste & Recycling (C&I) - Campus	Glass – Recycling	2.75	tonnes	21.32	kg CO2e.tonne	Defra: Waste Disposal (Other)	0.06
Waste Generated in Opera	3	Waste & Recycling (C&I) - Campus	Paper - Recycling	11.06	tonnes	21.32	kg CO2e.tonne	Defra: Waste Disposal (Paper)	0.24
Waste Generated in Opera	3	Waste & Recycling (C&I) - Campus	Metal - Recycling	6.61	tonnes	21.32	kg CO2e.tonne	Defra: Waste Disposal (Paper)	0.14
Waste Generated in Opera	3	Waste & Recycling (C&I) - Campus	Cardboard - Recycling		tonnes	21.32	kg CO2e.tonne	Defra: Waste Disposal (Paper)	-
Waste Generated in Opera	3	Waste & Recycling (C&I) - Campus	WEEE – Recycling	12.01	tonnes	21	kg CO2e.tonne	Defra: Waste Disposal (Electrical Items)	0.26
Waste Generated in Opera	3	Waste & Recycling (Municipal) - CCourt	Landfill [Est.]	8.54	tonnes	437.37	kg CO2e.tonne	Defra: Waste Disposal (Refuse)	3.73
Waste Generated in Opera	3	Waste & Recycling (Municipal) - Ccourt	Combustion [Est.]	60.69	tonnes	21	kg CO2e.tonne	Defra: Waste Disposal (Refuse)	1.29
Waste Generated in Opera	3	Waste & Recycling (Municipal) - Ccourt	Food Waste – AD [Est.]	18.74	tonnes	10.204	kg CO2e.tonne	Defra: Waste Disposal (Refuse)	0.19
Waste Generated in Opera	3	Waste & Recycling (Municipal) - Ccourt	Mixed Recycling [Est.]	18.13	tonnes	21	kg CO2e.tonne	Defra: Waste Disposal (Refuse)	0.39
Waste Generated in Opera	3	Waste & Recycling (C&D) - Campus	Average construction [treatme		tonnes		kg CO2e.tonne	Defra: Waste Disposal (Construction)	-
Waste Generated in Opera	3	Wastewater	Campus & C Court (non-domes	29,826	m3	0.2300	kg CO2e.m3	Scottish Water - Sustainability Report 2019 (pag	6.86
	3	Travel (business - not owned)	Grey fleet - Average car - unkn	28,831	miles	0.27584	kg CO2e.mile	Defra: Business travel - land (cars (average - un	7.95
Business Travel	3	Travel (business - not owned)	Grey fleet - Average motorbike	-	miles	0.18245	kg CO2e.mile	Defra: Business travel - land (motorbike - avera	-
Business Travel	3	Travel (business - not owned)	Hired – Medium petrol car	16,464	miles	0.30029	kg CO2e.mile	Defra: Business travel - land (cars (by size))	4.94
Business Travel	3	Travel (business - not owned)	Hired – Medium diesel car	2,838	miles	0.26775	kg CO2e.mile	Defra: Business travel - land (cars (by size))	0.76
Business Travel	3	Travel (business - not owned)	Hired – Medium hybrid car	-	miles	0.17216	kg CO2e.mile	Defra: Business travel - land (cars (by size))	-
Business Travel	3	Travel (business - not owned)	Taxis - Black Cab	33,309	km	0.31191	kg CO2e.km	Defra: Business travel - taxi - black cab	10.39
Business Travel	3	Travel (business - not owned)	Coach	96,140	km	0.02732	kg CO2e.pass.km	Defra: Business travel - land - bus	2.63
Business Travel	3	Travel (business - not owned)	Air – Domestic (average)	448,234	km	0.2443	kg CO2e.pass.km	Defra: Business travel - air (average passenger)	109.50
Business Travel	3	Travel (business - not owned)	Air – Short-haul (average)	368,525	km	0.15553	kg CO2e.pass.km	Defra: Business travel - air (average passenger)	57.32
Business Travel	3	Travel (business - not owned)	Air – Long-haul (average)	2,196,728	km	0.19085	kg CO2e.pass.km	Defra: Business travel - air (average passenger)	419.25
Business Travel	3	Travel (business - not owned)	Air – International (average)	912,439	km	0.18181	kg CO2e.pass.km	Defra: Business travel - air (average passenger)	165.89
Business Travel	3	Travel (business - not owned)	Rail – National - TMC	589,137	km	0.03694	kg CO2e.pass.km	Defra: Business travel - land - rail	21.76
Business Travel	3	Travel (business - not owned)	Rail – National - i-expenses	387,782	km	0.03694	kg CO2e.pass.km	Defra: Business travel - land - rail	14.32
Business Travel	3	Travel (business - not owned)	Rail - International	-	km	0.00497	kg CO2e.pass.km	Defra: Business travel - land - rail	-
Employee Commuting	3	Travel (commuting - staff)	Rail	3,096,222	km	0.03694	kg CO2e.pass.km	Defra: Business travel - land - rail	114.37
Employee Commuting	3	Travel (commuting - staff)	Underground	31,569	km	0.02991	kg CO2e.pass.km	Defra: Business travel - land - rail - light rail and	0.94
Employee Commuting	3	Travel (commuting - staff)	Public bus	2,309,420	km	0.1195	kg CO2e.pass.km	Defra: Business travel - land - local bus (not Lon	275.98
Employee Commuting	3	Travel (commuting - staff)	Car - Average - unknown	1,367,047	km	0.17140	kg CO2e.km	Defra: Business travel - land (cars (average - un	234.31
Employee Commuting	3	Travel (commuting - staff)	Motorcycle/ Moped (average)	31,484	km	0.11337	kg CO2e.pass.km	Defra: Business travel - land - motorbike	3.57
Employee Commuting	3	Travel (commuting – students)	Rail - National	19,546,912.99	km	0.03694	kg CO2e.pass.km	Defra: Business travel - land - rail	722.06
Employee Commuting	3	Travel (commuting – students)	Underground	693,785	km	0.02991	kg CO2e.pass.km	Defra: Business travel - land - rail - light rail and	20.75
Employee Commuting	3	Travel (commuting – students)	Public bus	16,104,844	km	0.1195	kg CO2e.pass.km	Defra: Business travel - land - local bus (not Lon	1,924.53
Employee Commuting	3	Travel (commuting – students)	Car - Average - unknown	3,446,360	km	0.17140	kg CO2e.km	Defra: Business travel - land (cars (average - un	590.71
Employee Commuting	3	Travel (commuting - students)	Motorcycle/ Moped (average)	10,988	km	0.11337	kg CO2e.pass.km	Defra: Business travel - land - motorbike	1.25
Employee Commuting	3	Travel (end-of-term UK domicilled)	Coach	471,833	km	0.02732	kg CO2e.pass.km	DEFRA: Business Travel - land - bus	12.89
Employee Commuting	3	Travel (end-of-term UK domicilled)	Car - Average - unknown	606,948	km	0.17140	kg CO2e.pass.km	DEFRA: Business Travel - land - car - average (ur	104.03
Employee Commuting	3	Travel (end-of-term UK domicilled)	Air - Domestic (average)	757,477	km	0.2443	kg CO2e.pass.km	Defra: Business travel - air (average passenger)	185.05
Employee Commuting	3	Travel (end-of-term UK domicilled)	Rail - National	2,110,631	km	0.03694	kg CO2e.pass.km	DEFRA: Busines travel - land - rail	77.97
Employee Commuting	3	Travel (int. stu. to Glasgow)	Air – Long-haul (average)	25,609,117	km	0.19085	kg CO2e.pass.km	Defra: Business travel - air (average passenger)	4,887.50
Employee Commuting	3	Travel (int. stu. to Glasgow)	Air – Short-haul (average)	7,992,827	km	0.15553	kg CO2e.pass.km	Defra: Business travel - air (average passenger)	1,243.12
Supply Chain	3	Procurement	Procurement						11,092.00

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