

University for the Common Good

Carbon Footprint Report: 2016-2017 (updated) & 2017-18

8 October 2018

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Introduction

GCU is committed to aligning its operations with its mission to be the University for the Common Good. Disclosing and reporting emissions helps achieve this by providing a platform for assessing environmental impacts from different activities on an equitable basis, identifying opportunities for improvement and prioritising resources.

Reporting emissions also helps the University meet a number of compliance obligations and reporting commitments¹.

Within this context, this report updates emissions for the 2016-2017 reporting period by adding emissions from procurement activity and provides an interim summary of emissions for the 2017-2018 reporting periods. Emissions for the 2014-2015 and 2015-2016 reporting periods have been included for comparison.

This report is complemented by GCU's second Environmental Facts & Figures Report², which elaborates on the University's efforts to reduce environmental impacts from activities associated with the emission categories included in this report and which includes a number of no- or low-carbon activities that would not be evident in an emissions report.

Data & Methodology

This report uses the same datasets, operational control boundaries and methodology used in previous reporting periods³ and includes data collected by the University, its suppliers and APUC (for emissions associated with procurement activity).

With regards to emission activity, there have been both additions and exclusions. The range of fluorinated gases has increased and metal recycling and business travel in taxies have been added, whilst primary data for construction and demolition waste has been excluded because emissions in this category are negligible.

The reporting periods included in this report represent the post-consolidation of GCU's operations in Glasgow and the completion of the campus redevelopment.

As the dataset for procurement emissions only becomes available in February following the reporting period, emissions from procurement activity have been disaggregated from other scope 3 emissions. Within the procurement dataset, emissions associated with construction have been further disaggregated to highlight the exceptional, non-recurring nature of the Heart of Campus redevelopment works. This disaggregation justifies the inclusion of the emission inventories for previous reporting periods.

¹ Climate Change (Scotland) Act 2009 (asp.12), Climate Change (Duties of Public Bodies: Reporting Requirements) (Scotland) Order SSI 2015/347 and HESA EMR returns (amongst others).

² Available from: <u>gcu.ac.uk/sustainability/reporting/</u>

³ Previous Carbon Footprint Reports are available from: <u>gcu.ac.uk/sustainability/reporting/</u>

The full emission inventory and underlying datasets are available from the data page in the <u>sustainability section</u> of University's website. Emission factors used to calculate GCU's carbon emission are sourced from the <u>Department for Business</u>, <u>Energy & Industrial Strategy</u>.

Last but not least, it is noted that the data and calculations used in this report have not benefited from independent verification or quality assurance.

Inventory & Emissions

A summary of the University's emissions for the reporting periods between 2014-2015 and 2017-2018 are summarised in Figure 1 and Table 1. A breakdown by emission category is provided in Table 2, whilst Appendix A further details emissions by activity and Appendix B by procurement category.



			Tonnes CO ₂ e					
Scope	Description	2014-15	2015-16	2016-17	2017-			
					18*			
1	Direct combustion of fuels and other fugitive emissions.	4,598	4,794	4,745	4,589			
2	Electricity from the National Grid	2,784	2,902	2,613	1,881			
3	Other up-and downstream activities outwith GCU's operational	31,729	34,942	27,547	18,099*			
	control							
Total		39,112	42,638	34,905	24,569*			

Figure 1 Summary of emissions by scope (NB. Scope 3 data for 2017-18 is incomplete).

Table 1 Summary of emissions by scope (NB. Scope 3 data for 2017-18 is incomplete).

Emission	mission Scope Emission Activity		Tonnes CO ₂ e				Observations
Category			2014-15	2015-16	2016-17	2017-18	
Organisation's	1	Gas consumption	4,527	4261	4575	4483	Gas (from the National Grid) used on-campus (Energy Centre and boilers) and Caledonian Court.
buildings	1	Refrigerant Gases	61	225	163	100	Periodic losses from leaks in refrigeration systems.
Organisation's	1	Business travel (own fleet)	10	8	8	7	GCU's fleet (leased).
vehicles							
Purchased	2	Electricity (Nat. Grid) Total	2,784	2902	2613	1880	Electricity purchased from the National Grid. Reduction driven by both a decrease in the amount
electricity							factor ⁴ .
Purchased	3	Water	17	16	15	14	
Goods &							
Services							
Purchased	3	Procurement (exc.	8760	8956	9482	>Feb 2019	Procurement activity excluding categories for which GCU has primary data (gas, electricity, wate
Goods &		construction) - HESCET					activity (see below).
Services							
Purchased	3	Construction - HESCET	3,588	7,850	1,901	>Feb 2019	The Heart of Campus redevelopment accounted for a significant proportion of the construction
Goods &							As an exception, non-recurring item, it was deemed prudent to report these emissions separate
Services							
Other fuel &	3	Electricity (transmission &	256	263	244	160	Reduction directly associated with the reduction in electricity purchased from the National Grid
energy rel.		distribution losses)					
activities							
Waste	3	General Waste & recycling	66	62	84	108	Increase attributed to higher emission factor for waste landfilled (from Caledonian Court).
Generated in	3	Construction & demolition	0.4	N/A	N/A	N/A	
Operations		waste					
	3	Wastewater	34	32	29	27	Wastewater is linked to water use and reductions are attributed to decreasing water consumption
Business travel	3	Travel (business – not	2,386	1934	1414	1285	Reduction attributed to fewer long-haul flights.
		owned)		-			
Employee	3	Travel (commuting – staff)	1,273	1160	1116	1080	Derived from 2015 Travel Survey.
commuting	3	Travel (commuting – students)	8,797	7868	7570	8603	Derived from 2015 Travel Survey. Increase derived from higher student numbers.
	3	Travel (int. students flights	6,537	6802	5693	6849	Changes associated with international student numbers and journeys to the UK. Increase derived
	1	to Glasgow)					emission factor.

Table 2 Emissions in emission categories by reporting period. (NB. Scope 3 data for 2017-18 is incomplete).

of electricity purchased and improving emission
, waste and recycling and travel) and construction
xpenditure during the periods covered by this report. /.
ind lower emission factor.
n.
from higher student numbers and deteriorating

⁴ Two factors influence emissions: quantity of emission activity and the associated emission factor. Examples of emission activity includes kWh electricity purchased from the National Grid, tonnes of waste produced/recycled and distance travelled using a specific mode of transport. Emission factors are used to convert the emission activity into a common denominator (tonnes CO2e).

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Emission Trends & Observations

GCU's emissions, reported across 15 activity categories (Table 2) peaked in 2015-16 at 42,638 tonnes CO_2e . The peak is attributed to the construction activity for the Heart of Campus redevelopment (Figure 1) and since then, emissions have fallen below pre-redevelopment levels in most activity categories, with emissions in 2016-17 (34,905 tonnes CO_2e) being 18% lower than 2015-2016 (and 11% lower than in 2014-15.

In 2016-17, the last year for which a complete dataset is available, six emission categories were deemed to be material (i.e. representing more than 5% of emissions) and accounted for 91% of all reported emissions. These categories and a brief synopsis of the associated emission trends are detailed below:

- Procurement activity (excluding construction scope 3 27% of reported emissions in 2016-17) There is an upward trend (an 8% increase relative to 2014-15) in emissions associated with procurement activity (excluding construction). Other than perhaps standard budgetary controls⁵, the University does not have a specific plan for reducing emissions from procurement activity.
- Student commuting (scope 3 22% of reported emissions in 2016-17) -- Emissions appeared to be on a downward trajectory until 2017-18, when an increase in student numbers resulted in a 13% increase in emissions. The University's Sustainable Travel Plan (STP) sets out a number of interventions designed to help students (as well as staff) choose more sustainable modes of travel (i.e. lower carbon). Travel surveys evaluate the effectiveness of these interventions and inform the review of the STP.
- End of term international student flights (scope 3 16% of reported emissions in 2016-17 includes EU students) Similar to emissions from student commuting, emissions from end-of-term student flights were on a downward trajectory (13% reduction between 2014-15 to 206-1), an increase in student numbers in 2017-18 and deteriorating emission factor for long-haul flights (which accounts for nearly 80% of the distance flown by international and EU students) resulted in a 20% increase in emissions relative to 2016-17. It is currently unclear what scope there is for the University to influence these emissions.
- Natural gas (scope 1 13% of reported emissions in 2016-17) Emissions from natural gas from the national grid in the University's energy centre and boilers have levelled off with emissions 1% lower in 2016-17 than in 2014-15. Updating the University's Estates' Carbon Management Plan will identify new opportunities for reducing emissions in this category.
- Electricity (scope 2 7% of reported emissions in 2016-17) Emissions from electricity use on campus and in the University's residencies exhibit a downward trend, with a 6% decline between 2014-15 and 2016-17 and 28% decline between 2016-17 and 2017-18. The decline is attributed in part to a 10% reduction in consumption and a 20% improvement in the

⁵ Budgetary control is important for this emission activity because emissions are calculated using an expenditure-based intensity factor.

emission factor. Updating the University's Estates' Carbon Management Plan will identify new opportunities for reducing emissions in this category.

Construction (Scope 3 – 5% of reported emissions in 2016-17) – Emission peaked in 2015-16 and are attributed to the Heart of Campus redevelopment. It is anticipated that emissions will level off in subsequent years to reflect background levels of ongoing refurbishment of the University's estate. Other than perhaps standard budgetary controls⁶, the University does not have a specific plan for reducing emissions from construction activity.

The remaining categories, which account for 9% of total reported emissions in 2016-17, were not considered to be material sources of emissions, because they are below the 5% materiality threshold. Notwithstanding, with the exception of emissions from waste and recycling, emissions in these categories are lower than in previous years. Emissions from waste and recycling are increasing because of how waste from the University's student residencies is processed. With the exception of water and wastewater, The University has emission reduction plans for these emission activities (Table 3).

Emission Activity	Emission Reduction Plan
Travel (business – not owned) ⁷	Sustainable Travel Plan
Travel (commuting – staff)	Sustainable Travel Plan
Electricity (transmission & distribution losses)	Estates' Carbon Management Plan
Refrigerant Gases	Asset maintenance plan
General Waste & Recycling	Waste Minimisation & Recycling Plan
Waste water	N/A
Water	N/A
Business travel (own fleet)	Sustainable Travel Plan

Table 3 Emission reduction plans for emission activities that were not material in 2016-2017 reporting period.

Concluding Remarks

Whilst it is encouraging that the University's carbon emissions appear to be falling, consideration should be given to whether existing measures and arrangements across the University are deemed sufficient to support and contribute to Scotland's greenhouse gas emission reduction targets⁸.

⁶ Budgetary control is important for this emission activity because emissions are calculated using an expenditure-based intensity factor.

⁷ There is a risk that emissions in this category are under-reported because it has not been possible to incorporate data from business trips paid by individual members of staff. A review of business travel data should be carried out to understand what impact not including this data has.

⁸ Currently 80% by 2050 and 42% by 2020, relative to [mostly] a 1990 baseline, as set in the Climate Change (Scotland) Act 2009 (asp.12)

Appendix A – Full Inventory & Emissions

Breakdown of GCU's emissions inventory by emission activity and source. Entries with a "N/A" denote an activity for which there is no data, whilst those with "-" mean zero activity. Construction and demolition waste not included because it is an insignificant amount of waste and emissions are low. Data last available for 2014-15, where it was less than 0.39 tonnes CO2e.

Emission	Scope	Emission Activity	Emission Source	Tonnes CO ₂ e			
Category				2014-15	2015-16	2016-17	2017-18
Organisation's	1	Gas consumption	City Campus	4,209.23	4,261.01	4,274.76	4,176.64
buildings			Caledonian Court	317.90	300.00	299.91	306.01
	1	Refrigerant Gases	R134A	-	-	-	1.36
			R410A	10.60	-	2.30	25.31
			R404A	-	-	-	17.81
			R407C	50.80	221.76	160.25	55.33
			R22	-	-	-	
			R422D	-	3.00	-	
Organisation's	1	Business travel (own fleet)	Petrol	-	-	0.15	0.14
vehicles			Diesel	9.71	8.34	7.76	6.61
Purchased	2	Electricity (Nat. Grid) Total	City Campus	2,328.33	2,505.90	2,233.55	1,602.29
electricity			Caledonian Court (Phase - 1)	276.79	240.80	247.46	166.66
			Caledonian Court (Phase - 2)	178.98	155.64	131.55	111.58
Purchased	3	Water	City Campus	17.20	16.38	14.88	14.04
Goods & Services		Procurement (HESCET dataset) – excl. construction	Breakdown of procurement emissions is available from gcu.ac.uk/sustainability/data	8,760	8,956	9,482	Available Feb. 2019
		Procurement (HESCET dataset) – construction		3,588	7,850	1,901	Available Feb. 2019
Other fuel & energy rel. activities	3	Electricity (transmission & distribution losses)	Combined for electricity purchased from the National Grid for both Campus and Caledonian Court.	229.87	262.52	244.27	160.30
Waste	3	[C&I] Waste & Recycling	C&I Waste – Landfill (London +GLA SAMPRO) – [Est.]	0.73	2.27	1.14	1.14
Generated in			C&I Waste – Combustion	6.20	2.70	2.19	2.21
Operations			C&I Waste – Recycling	0.50	3.52	4.44	2.5
			Organic: Food & drink waste AD	0.37	0.45	0.53	0.59
			Glass – Recycling	0.04	0.03	0.03	0.11
			Paper – Recycling	N/A	0.02	0.11	0.08
			Metal – Recycling	-	-	-	0.01
			WEEE – large – Recycling	0.02	0.03	-	0.35
			WEEE – small – Recycling	0.92	0.14	0.32	_
	3	[Domestic] Waste & Recycling – Caledonian Court	Domestic Waste – Landfill [Est.]	57.38	53.08	75.07	73.63
			Domestic Waste – Recycling [Est.]	0.04	0.04	0.04	0.04
Waste water	3	Waste water	Waste water treatment	33.64	32.02	29.10	27.44
Business	3	Travel (business - not owned)	Grey fleet – Medium petrol car	16.96	20.17	11.16	5.94
travel			Grey fleet – Medium diesel car	9.21	10.17	5.67	3.03
			Grey fleet – Medium hybrid car	0.29	0.31	0.16	0.09
			Hired – Medium petrol car	3.41	2.38	1.72	1.41
			Hired – Medium diesel car	5.28	4.72	8.13	3.79
			Hired – Medium hybrid car	-	-	-	0.04

Emission	Scope	Emission Activity	Emission Source		Tonnes CO ₂ e		
Category				2014-15	2015-16	2016-17	2017-18
			Taxis – Regular Black Cab	N/A	N/A	N/A	12.02
			Air – Domestic (average)	469.95	328.30	175.65	210.38
			Air – Short-haul (average)	202.73	204.79	115.26	159.37
			Air – Long-haul(average)	1,657.82	1,334.25	633.37	512.69
			Air – International (average) – disaggregated in 2016-2017	N/A	N/A	447.25	370.60
			Rail – National	20.49	28.45	15.17	5.71
			Rail - International	N/A	0.02	0.02	0.02
Employee	3	Travel (commuting - staff)	Rail	312.90	310.09	290.66	271.71
Commuting			Underground	10.23	6.76	5.51	4.92
			Public bus	382.89	426.68	426.67	415.52
			Car (Petrol) - medium	355.99	254.85	239.70	236.14
			Car (Diesel) - medium	193.27	141.05	133.59	132.10
			Car (Hybrid) - medium	6.08	-		-
			Motorcycle/ Moped	12.11	20.11	19.58	19.35
	3	Travel (commuting – students)	Rail	1,437.96	2,123.40	1,967.37	2,173.41
			Underground	60.62	50.69	40.68	42.39
			Public bus	4,132.32	4,209.36	4,168.79	4,767.86
			Car (Petrol) - medium	2,029.29	1,008.09	944.35	1,095.86
			Car (Diesel) - medium	1,101.73	476.08	449.07	523.11
			Car (Hybrid) - medium	34.64	-		-
	3	Travel (int. stu. to Glasgow)	Int. stu. travel to Glasgow (long-haul)	5,185.10	5,251.44	4,212.85	5,635.24
			Int. stu. travel to Glasgow (short-haul)	1,352.80	1,550.27	1,078.23	1,214.23

Appendix B – Procurement Activity Inventory & Emissions

Breakdown of emissions associated with the university's procurement activity. Data provided by APUC using the Higher Education Supply-Chain Emissions Tool (HESCET). Data for 2017-18 is anticipated to become available after February 2019.

Product	t CO2e			
Category	2014-2015	2015-2016	2016-17	
Agriculture products	65.22	51.88	109.41	
Forestry products	0.3	0.32	0.19	
Fish products	0.69	0.72	0.43	
Food and drink products	71.13	63.2	187.54	
Textiles	4.03	4.32	5.15	
Wearing apparel	61.81	59.11	72.79	
Wood and wood products	179.73	308.9	390.17	
Pulp and paper, paper products	238.1	223.27	282.92	
Printing matter and related services	313.99	402.53	359.25	
Refined petroleum, coke and other fuels	7.63	6.89	13.73	
Inorganic chemicals	28.63	20.26	27	
Organic chemicals	32.29	22.85	30.46	
Paints, varnishes, printing ink etc	7.48	14.93	25.01	
Pharmaceuticals	73.01	50.44	63.14	
Other chemical products	19.91	10.31	21.27	
Plastic products	145.06	135.06	143.52	
Glass and glass products	10	19.68	0.99	
Ceramic goods	5.72	11.26	0.56	
Structural clay products	4.37	-	8.77	
Cement, lime and plaster	25.07	-	50.3	
Articles of concrete, stone etc	5.58	-	11.21	
Iron and steel	15.93	2.48	31.21	
Non-ferrous metals	2.7	1.79	4.86	
Metal products	797.4	739.1	837.45	
Machinery and equipment	219.93	320.64	336.74	
Office machinery and computers	1,503.05	908.85	566.86	
Electrical machinery	78.93	96.99	106.96	
Radio, television and communications	114.12	244.69	181.25	
Medical and precision instruments	430.92	280.55	411.46	
Motor vehicles	44.93	10.75	16.08	
Furniture, other manufactured goods, recycling services	372.85	1,361.00	318.2	
Motor vehicle distribution and repair, automotive fuel retail	-	2.7	9.38	
Hotels, catering, pubs etc	82.29	70.52	102.21	
Air transport	-	-	4.89	
Post and telecommunications	173.16	86.12	87.76	
Banking and finance	14.25	6.81	84.52	
Insurance and pension funds	3.9	9.6	7.67	
Auxiliary financial services	3.65	3.66	4.54	
Renting of machinery etc	139.79	185.53	196.73	
Computer services	509.63	509.75	717.46	
Legal, consultancy, other business activities	357.55	490.31	541.35	
Public administration and defence	206.7	358.6	378.28	
Education	607.24	356.04	996.12	
Health and social work	3.71	5	4.44	
Services from membership organisations	13.41	14.26	23.27	
Recreational services	93.47	42.51	62.32	
Other service activities	1,312.29	1,189.92	1,320.66	
Unclassified	358.76	251.61	325.62	
Total	8,760	8,956	9,482	

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