Scope 3 baseline
The University of Manchester

Introduction

► Scope 3 emissions are emitted as an indirect result of our activities.

► Through Universities UK, the higher education sector has committed to "setting a target for Scope 3 emission reductions and other environmental targets beyond emissions" as well as "setting out how progress against these targets will be reported in a transparent, consistent, and understandable way".

► In 2022, working with consultancy EcoAct, we calculated our baseline Scope 3 emissions (2018/19) using the Greenhouse Gas Protocol.

► This report details our baseline. If you have any queries please contact es@manchester.ac.uk

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Targets

▶ In July 2023, the University set a Scope 3 emissions (which are emitted as an indirect result of our activities) target of **net zero by 2050**. We are currently developing our plans on how to meet this aspiration. We have already set the following targets:

Waste (0.2% of our Scope 3 emissions)
▶ Recycle 45% of the waste we produce through campus operations by 2025.
▶ Divert 100% of waste from landfill via new waste contracts from 2023 onwards.
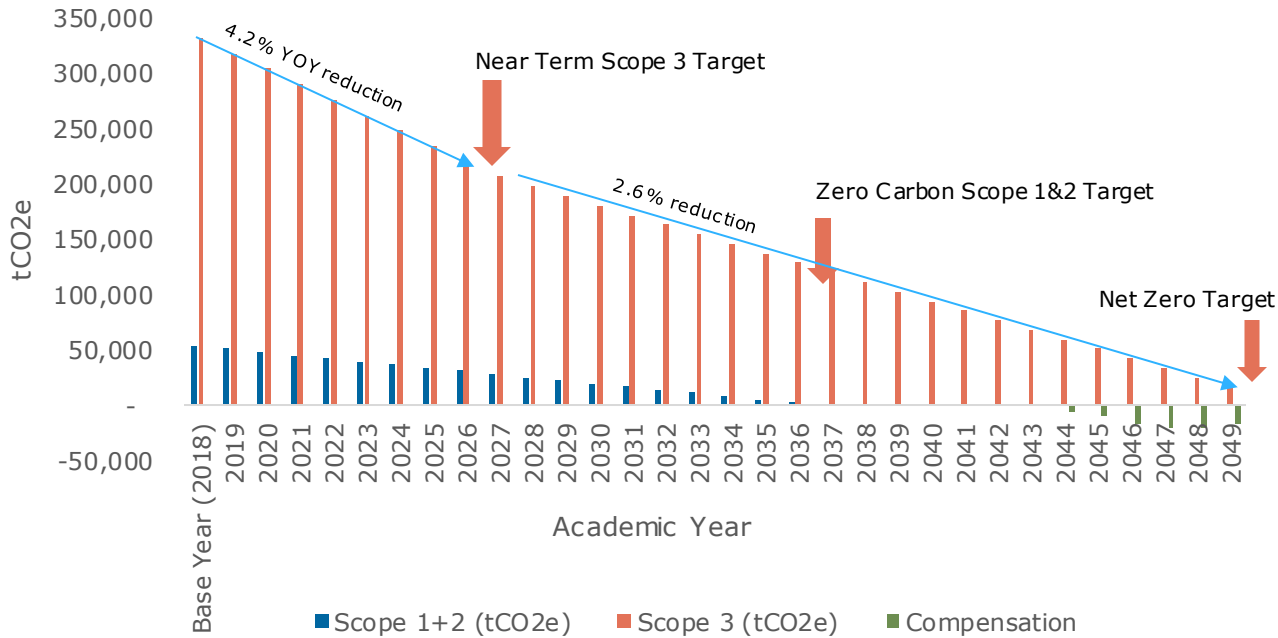
Business travel (5.9% of our Scope 3 emissions)
▶ Aim to limit annual emissions from air travel to 50% of our 2018/19 level.

Investments (1.6% of our Scope 3 emissions)
▶ Reach net zero on investment portfolio by 2038.
▶ Reduce weighted average carbon intensity of public equity holdings by at least 50% against 2019 baseline by 2027.
▶ Reduce carbon intensity within the investment grade credit allocation by 40% by 2027.
▶ Reduce energy consumption within the investment property portfolio by 10% by 2027.

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Modelling to Net Zero by 2050

Linear Target Modelling (Business as Usual)

tCO2e

350,000
300,000
250,000
200,000
150,000
100,000
50,000
-
-50,000

4.2% YOY reduction

Near Term Scope 3 Target

2.6% reduction

Zero Carbon Scope 1&2 Target

Net Zero Target

Academic Year

Base Year (2018), 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049

■ Scope 1+2 (tCO2e)   ■ Scope 3 (tCO2e)   ■ Compensation

Near Term Target (5-10 years from baseline) suggestion: 40% reduction in Scope 3 emissions by 2028*

Long Term Target suggestion: 95% Reduction in Scope 3 emissions by 2050, compensating the remaining 5% (reaching Net Zero)**
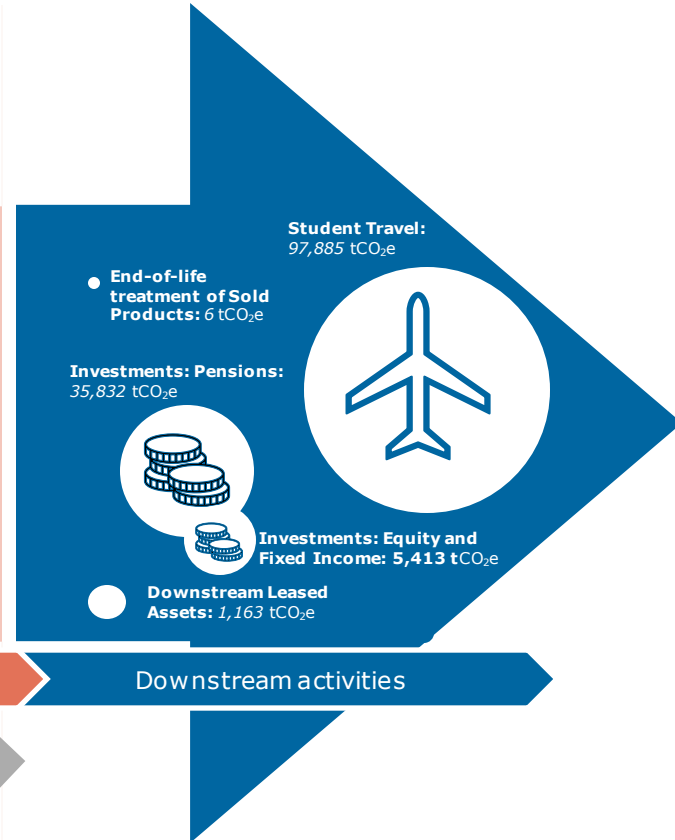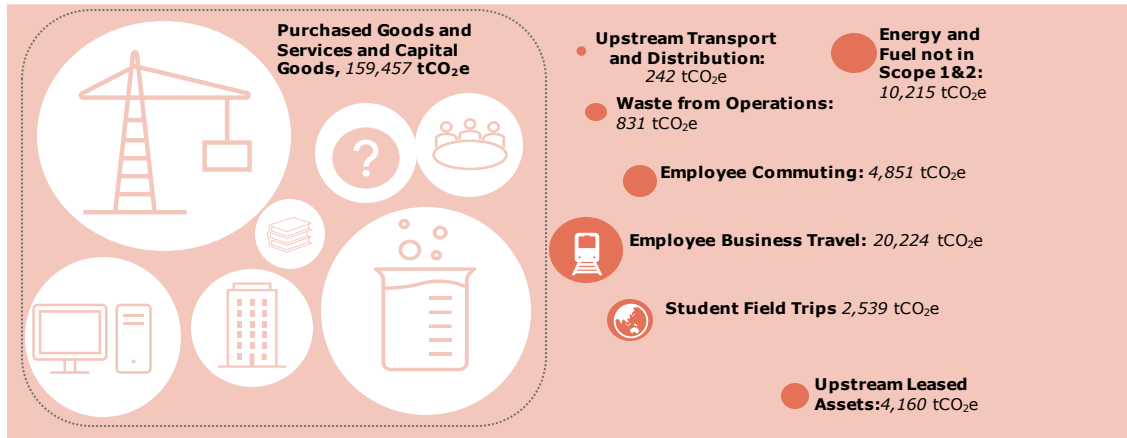
These reduction targets are in-line with the SBTi Net Zero guidance and is modelled on a business-as-usual basis.

*Near-term science-based targets must cover at least 95% of company-wide scope 1 and 2 emissions. For companies with scope 3 emissions that are at least 40% of total emissions (scope 1, 2, and 3 emissions), at least 67% of scope 3 emissions must also be covered (SBTI Net Zero Standard, Page 22)

**Long-term SBTs must cover at least 95% of company-wide scope 1 and 2 emissions and 90% of scope 3 emissions. (SBTI Net Zero Standard, Page 23)

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July 2018-August 2019 Scope 3 Emissions Baseline

Total: 342,820 tCO$_2$e (Location-Based)

Purchased Goods and Services and Capital Goods, *159,457* **tCO$_2$e**

Upstream Transport and Distribution: *242* tCO$_2$e

Waste from Operations: *831* tCO$_2$e

Energy and Fuel not in Scope 1&2: *10,215* tCO$_2$e

Employee Commuting: *4,851* tCO$_2$e

Employee Business Travel: *20,224* tCO$_2$e

Student Field Trips *2,539* tCO$_2$e

Upstream Leased Assets: *4,160* tCO$_2$e

Student Travel: *97,885* tCO$_2$e

End-of-life treatment of Sold Products: *6* tCO$_2$e

Investments: Pensions: *35,832* tCO$_2$e

Investments: Equity and Fixed Income: *5,413* tCO$_2$e

Downstream Leased Assets: *1,163* tCO$_2$e

Upstream activities

Downstream activities

Excluded categories/activity due to relevance to University and/or footprint boundary:
- Processing of Sold Goods
- Use of Sold Goods
- Franchises
- Equity Investments: Relevant, not included due to lack of data visibility
- Student study abroad travel
- Visitor travel to/from campus university events

2018/19 was chosen as our baseline due to the last "normal" pre-covid year

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Impact Categories

Purchased Goods and Services and Capital Goods, *159,457* **tCO$_2$e**

Student Travel: *97,461* tCO$_2$e

Investments: Pensions *35,832* tCO$_2$e

These categories make up ~80% of the University's footprint and these will inform the majority of our carbon reduction plan

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Academic Year 2018 Scope 3 Emissions

Sources of Emissions	Metric tonnes CO2e	% of total Footprint (Market Based)
Cat 1 - Purchased Goods and Services	96,368	29.3%
Cat 2 - Capital Goods	63,089	19.2%
Cat 3 - Energy and Fuel	10,215	3.1%
Cat 4 - Transportation & Distribution	242	0.1%
Cat 5 - Waste	831	0.3%
Cat 6 - Business Travel	16,504	5.0%
Cat 6 - Field Trips	2,539	0.8%
Cat 7 - Staff Commuting	3,639	1.1%
Cat 8 - Upstream Leased Assets (Location Based)	4,160	1.3%
Cat 8 - Upstream Leased Assets (Market Based)	523	0.2%
Cat 9 - Student Travel	97,461	29.7%
Cat 10 - Processing of Sold Goods	-	0.0%
Cat 11 - Use of Sold Goods	-	0.0%
Cat 12 - End of Life Treatment	6	0.002%
Cat 13 - Downstream Leased Assets	1,163	0.4%
Cat 14 - Franchises	-	0.0%
Cat 15 - Investments: Mercer Report (Equity)	5,415	1.6%
Cat 15 - Investments: Pensions	35,832	10.9%
TOTAL (Location Based) tCO2e	337,463	
TOTAL (Market Based) tCO2e	333,827	

Where possible, **primary data** (electricity consumption, mass, energy etc.) has been collected directly from internal business units within The University of Manchester.

Where **secondary data** has been used (spend/average data), there is an increase in uncertainty of emissions and the chance of driving action throughout your value chain decreases.

A greater proportion of primary data will need to be obtained in future to reduce carbon through engagement, strategy and governance based on detailed product data provided by suppliers.


Effort required (time/cost)

Spend-based
- **Data source:** Spend data from procurement
- **Function:** Assess relative materiality
- **Level of detail:** Company aggregate; sector average

Industry databases
- **Data source:** LCA database, R&D, sales
- **Function:** track product-level performance
- **Level of detail:** by SKU*; ingredients/components; market average data

Supplier
- **Data source:** Suppliers
- **Function:** Track performance at ingredient, component, material level
- **Level of detail:** by ingredient / component / material; supplier-specific data

Greater accuracy requires more detailed analysis

Efficacy (accuracy/ability to influence)

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Data Key

► Throughout the following slides, there is a key in the top right corner, explaining the activity data type for the category being analysed.
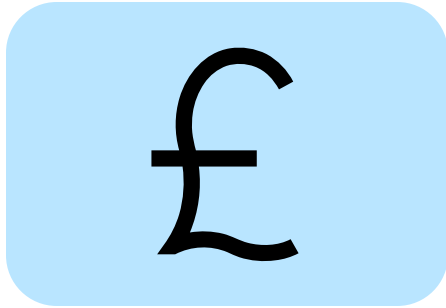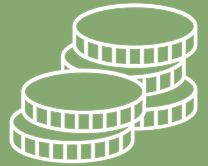
Spend Data
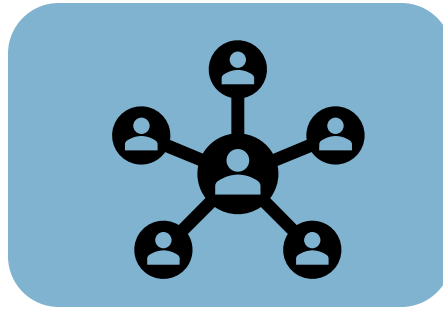
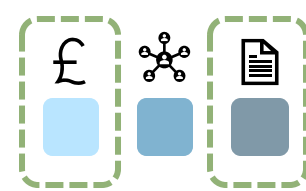Average Data

Actual Data

Results

Upstream categories

Using DEFRA SIC Code Emission Factors to calculate emissions from Spend-Based activity.

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Category 1 & 2:

Purchased Goods & Services, Capital Goods

Category 1:
Purchased Goods & Services

Category 1 **emissions are responsible for 28.4%** of The University of Manchester's carbon footprint, totalling at 96,368 tCo_2e.

All calculations other than food/catering supplies (calculated by Klimato) have been based on spend data. Progress needs to be made to collect raw data from suppliers to enhance this data over time.

Category 1	tCO2e	% of Total
Laboratory/Animal House Supplies & Services	34,351	35.65%
Computer Supplies & Services	19,290	20.02%
Miscellaneous/Unclassified	8,921	9.26%
Estates & Buildings	7,520	7.80%
Library & Publications	4,966	5.15%
Professional & Bought-in Services	4,772	4.95%
Furniture, Furnishings & textiles	3,136	3.25%
Catering Supplies & Services	2,856	2.96%
Workshop & Maintenance Supplies (Lab & Estates)	1,905	1.98%
Safety & Security	1,537	1.60%
The Arts, Audio-Visual & Multimedia Supplies and Services	1,460	1.51%
Stationery & Office Supplies	1,233	1.28%
Medical, Surgical, Nursing Supplies & Services	1,147	1.19%
Printing	1,119	1.16%
Janitorial & Domestic Supplies & Services	826	0.86%
Agricultural/Fisheries/Forestry/Horticultural/Oceanographic Supplies & Services	350	0.36%
Food and Drink (Catering) Calculated by Klimato	267	0.28%
Travel & Transport (incl. Vehicle hire & Subsistence)	266	0.28%
Water Supply	259	0.27%
Telecommunications, Postal & Mail Room Services	138	0.14%
Vehicles (Purchase, Lease, Contract Hire)	38	0.04%
Utilities	10	0.01%
Total	**96,368**	

Category 2:
Capital Goods
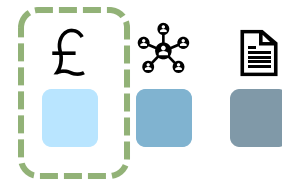
Category 2 emissions are responsible for 18.6% of The University of Manchester's carbon footprint, totalling at 63,089 tCO$_2$e

As with Category 1, progress needs to be made to collect raw data from suppliers to enhance this data over time, focusing on the embodied carbon* of construction projects across the campus

Target: net zero by 2050

Spend category	Emissions (tCO2e)
Plant Purchase, Hire & Maintenance, inc. Lifts, Air-conditioning, Boilers, Generators etc	594
Temporary & Mobile Buildings, Hire & Purchase	73
Capital Projects	62,422
Total	**63,089**

*Embodied carbon consists of all the GHG emissions associated with building construction, including those that arise from extracting, transporting, manufacturing, and installing building materials on site, as well as the operational and end-of-life emissions associated with those materials.

Category 1 & 2:
Purchased Goods & Services and Capital Goods
Summary of emissions by data source: top 85% of emissions
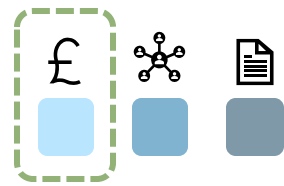
The University of Manchester Spend Category	Emissions (tCO2e)	% of Cat. 1 & 2 total
Capital Projects	62,422.05	39.1%
Laboratory Supplies & Services	34,350.62	21.5%
Computer Supplies & Services	19,290.48	12.1%
Miscellaneous/Unclassified	8,921.49	5.6%
Estates & Buildings	7,520.15	4.7%
Library & Publications	4,966.10	3.1%
Professional & Bought-in Services	4,771.77	3.0%
	137,470.88	86.2%

MATERIALITY

Target: net zero by 2050

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Category 3:
Fuel- and Energy-related Activities

Category 3
Fuel- & Energy-Related Activities
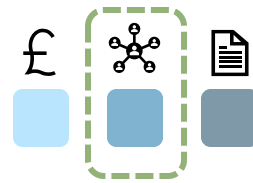
Fuel-and energy-related emissions are based on all consumption data of fuels and purchased energy used by The University of Manchester, as reported in Scope 1 & 2. Category 3 accounts for emissions such as transportation and distribution of fuel and transmission and distribution of electricity. Category 3 totals to **10,215 tCO$_2$e**, which is equivalent to **3% of total emissions**.

> Target: net zero by 2050

Energy and Fuel Related Activities	Fuel Type	Total tCO$_2$e
WTT - Electricity Generation:	Electricity	3,978.21
WTT - Electricity Gen T&D	Electricity	338.64
Transmission and Distribution	Electricity	2,360.13
Well to Tank	Natural Gas	3,454.91
Well to Tank	Gas Oil	49.67
Well to Tank	Petrol	19.85
Well to Tank	Diesel	13.68
Total		**10,215**

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Category 4:

Upstream Transportation and Distribution

Category 4
Upstream Transportation and Distribution
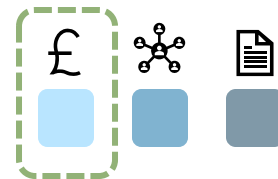
The University of Manchester' upstream T&D emissions includes all transportation to The University of Manchester' facilities which aren't already included in Category 1.

Category 4 itself accounts for **242 tCO$_2$e**, which is equivalent to **0.1% of total emissions**.
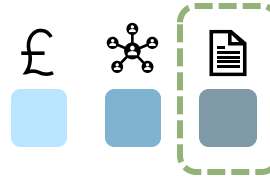
Target: net zero by 2050

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Category 5:

Waste Generated in Operations

Category 5
Waste Generated in Operations

Waste generated by The University of Manchester accounts for only 0.2% of the organisation's overall emissions, producing **831 tCO$_2$e annually.**

The University of Manchester' operations involve **various waste disposal methods**, including recycling, incineration and landfill. Emissions calculated using the **waste-type-specific method.**

Waste Category	Activity Data	Units	tCO$_2$e
Waste	17,329	Metric tonnes	298
Dry Recycling	753,245	m^3	533
Total			**831**

Target: Recycle 45% of the waste we produce through campus operations by 2025.

Target: Divert 100% of waste from landfill via new waste contracts from 2023 onwards.

Category 6:

Business Travel and Field Trips

Category 6
Business Travel and Field Trips
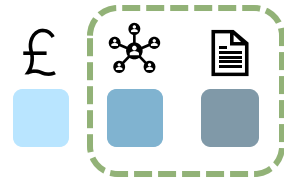
Category 6 is responsible for **22,763 tCO₂e** of total Scope 3 emissions, this category represents **6.7%** of total emissions.

	Activity type	Transport type	Distance	Unit	tCO₂e
Staff Business Travel	Business	Rail	7,954,083.0	Km	388.4
		Plane	97,973,783.0	Km	19,110.6
		Road	2,435,532.0	Km	716.4
	Hotels	N/A		N/A	397.3
Student Travel	Field Trips	Plane	246,556.1	Km	2,528.9
		Coach	7,720.0	Km	9.9
Total			**89,542,884**		**22,763**

Target: Aim to limit annual emissions from air travel to 50% of our 2018/19 level.

Target: net zero by 2050

Category 7:

Employee Commuting

Category 7
Employee Commuting
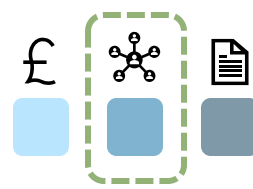
Responsible for **4,851 tCO₂e** or **1.4%** of total Scope 3 emissions. This category is calculated using The University of Manchester's Travel Survey where 8% of staff responded.

	Staff Numbers 2018/19	2018/19 Number of Staff Respondents	2018/19 Survey Response Rate	2018/19 tCO₂e
Staff Numbers	10,245	870	8%	4,851

Target: net zero by 2050

Category 8:
Upstream Leased Assets
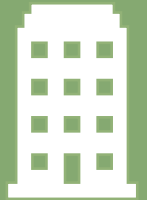
Category 8
Upstream Leased Assets
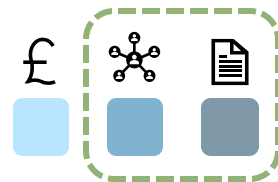
Due to the data centre having renewable energy, we have calculated the emissions on a location-based and market-based basis.

Category 8 is responsible for **4,160 tCO$_2$e** of total Scope 3 location based emissions, this category represents **1.2 %** of total emissions. If we account for the 100% renewable energy used for the data centre, Category 8 is responsible for **523 tCO$_2$e** of total Scope 3 market-based emissions, this category represents **0.2%** of total emissions.

Building Type	tCO$_2$e (Location Based)	tCO$_2$e (Market Based Based)
Cent Admin	0.26	0.26
Data Centre	3,636.27	-
Mixed	212.18	212.18
Offices	8.44	8.44
Research	117.84	117.84
Storage	68.83	68.83
Telescope	115.80	115.80
Total	**4,159.63**	**523.36**

Target: net zero by 2050

Results

Downstream categories
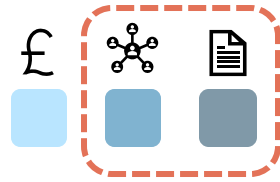
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Category 9:

Student Travel: Term Time Commuting

Category 9
Student Travel: Term Time Commuting

Responsible for **97,885 tCO$_2$e**, or **28.9%** of total Scope 3 emissions. This category is calculated using The University of Manchester's Travel Survey where 1% of students responded. The 2021/22 travel survey responses have been extrapolated to the 2018/19 student numbers.

August 2018 - July 2019	Student Numbers 2018/19	Student Numbers 2021/22	Travel Survey Response Numbers	Number of Student Respondents	2018/19 Total Well to Wheel tCO$_2$e
Domestic Travel to and from Base Home	21,978	22,835	236	1%	9,548
Student Weekly Commuting	40,241	N/A	1130	3%	4,148
International Travel	18,263	18,975	N/A	100%	84,190
Total					**97,885**

Target: net zero by 2050

Category 12:

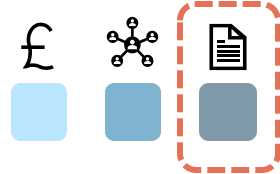End of Life Treatment of Sold Products

Category 12
## End of Life Treatment of Sold Products

Emissions from the disposal of gift shop sold products account for **0.002%** of all Scope 3 emissions, or **6 tCO_2e.** Despite low materiality, it is a significant category to drive sustainability/carbon to customers, staff and students as it is consumer facing.
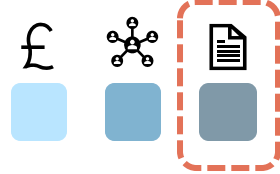
Target: net zero by 2050

Category	Total expected waste weight (t)	tCO_2e
Fleece	2,958.45	4.19
Accessories	201.18	0.28
T-Shirt	558.38	0.79
Jacket	340.69	0.48
Headwear	105.60	0.15
Unlisted	39.33	0.06
Total	**4,203.63**	**5.95**

Category 13:
Downstream Leased Assets

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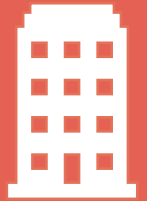
Category 13
Downstream Leased Assets

Category 13 includes any emissions from the operation of assets leased that are not already included in Scope 1 or Scope 2.

Responsible for **1,163 tCO$_2$e** of total Scope 3 emissions, this category represents **0.3 %** of total emissions.

Building Type	tCO$_2$e (market based)
Offices	491
Research	669
Mixed	3
Total	**1,163**

Target: net zero by 2050

Category 15:
Investments

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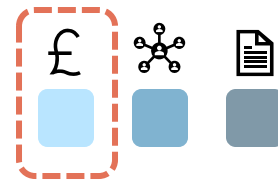
Category 15
Investments: Pensions

The UMSS trust follows the University's procurement policies, and it is included in the University's financial report, therefore we would deem that the University has operational control/influence over the trust, despite it being a separate entity. As we are calculating the footprint under the operational control method, this would be deemed appropriate to include.

Other pensions such as USS, Pension Saver, NHS Scheme, GMPF and Nest Pensions will be excluded from the footprint, due to the lack of operational control.
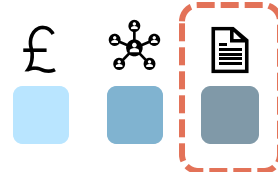
Target: net zero by 2050

Pensions are responsible for **35,832 tCO$_2$e** of total Scope 3 emissions, this category represents **10.6%** of total emissions.

Pension Asset Class	£(m) Invested Dec 2018	tCO$_2$e
Equity	216.5	15,717.68
Growth Fixed Income Assets	168.2	7,606.63
Matching Assets	206.3	12,507.94
Total		**35,832**

Category 15
Investments: Equity and Fixed Income

Pensions are responsible for 5,415 **tCO$_2$e** of total Scope 3 emissions, this category represents **1.6%** of total emissions.

Asset Class	£(m) Invested Academic Year 2021	tCO$_2$e
Ninety One - Global Equity	47	1,439
Mercer - Passive Sustainable Equity	46	519
Ruffer - Multi Asset	47	2,277
Mercer - Absolute Return Fixed Income	19	788
Mercer - Short Duration Bond Fund	19	392
BlackRock Property Fund	34	Not Calculated
Total	**212**	**5,415**

Target: Reach net zero on investment portfolio by 2038.

Target: Reduce weighted average carbon intensity of public equity holdings by at least 50% against 2019 baseline by 2027.

Target: Reduce carbon intensity within the investment grade credit allocation by 40% by 2027.

Target: Reduce energy consumption within the investment property portfolio by 10% by 2027.

Investment Intensity Metrics

The University commissioned an asset management consultancy to understand the emissions from their portfolio and therefore, the carbon calculations for Equity and Fixed Income are more refined due to the understanding of the actual footprint of the investments.

Investment Type	Carbon Intensity tCO2e/£m
Mercer Calculations, Equity and Fixed Income (2021/22)	30.42
Pensions (2018/19)	60.63

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