

Annual Carbon Footprint Report



University
of Victoria

PETER B. GUSTAVSON
School of Business

The world looks different from here.

Gustavson School of Business

2016

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Date	18/5/2017

synergy

Executive Summary

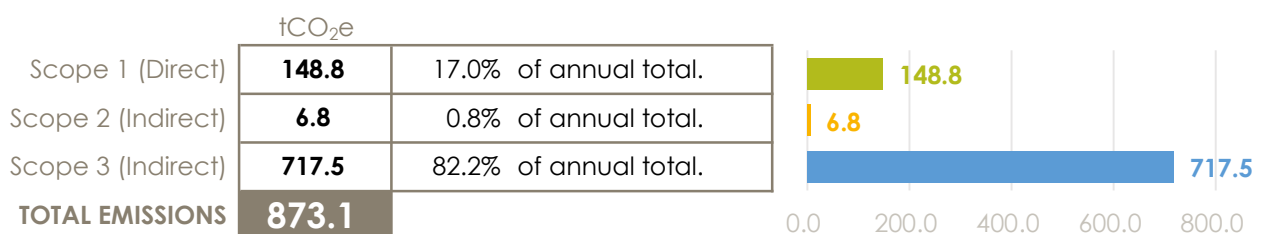
The Gustavson School of Business is an internationally accredited business school at the University of Victoria. The school occupies classrooms, meeting rooms and office space in the Business and Economics and David Strong Buildings (accounting for 54.6% of the total floor area). 2016 marks the eighth year that Gustavson has measured and reported their GHG emissions, with previous reports (2009 - 2014) completed by EcoCentric and ColdStream Consulting. The scope of this report includes natural gas, electricity, paper, employee commuting and student and employee travel. All scope 1 and 2 emissions (natural gas and electricity), as well as paper, are offset by the University of Victoria. The remaining Scope 3 emissions are expected to be offset by the school in future years.

In 2016, Gustavson had 18% more staff and faculty members and had 4% more students participating in travel programs than in 2015. Despite this growth in operations, total emissions increased just 5% over the previous year. The school's largest source of emissions is in student and employee travel which makes up 74% of the total carbon footprint and increased 11.6% over 2015. Employee commuting emissions also increased by 3%. Improvements to building operations and purchasing practices reduced emissions from natural gas, electricity and paper.

Company Information

Company Name	CSSI on behalf of Gustavson School of Business		
Contact Information	Rachel Goldsworthy	cssi@uvic.ca	250-853-3721
	Basma Majerbi	majerbi@uvic.ca	250-472-4281
Company Description	Office space, meeting rooms, and classroom usage in two UVic buildings		
Reporting Period	January 1st, 2016 - December 31st, 2016		
Baseline Year	2010 (Due to incomplete data/ scope changes in 2009)		
Inventory Boundary	Scope 1 (Direct Emissions) - Natural Gas		
	Scope 2 (Indirect Emissions from Purchased Electricity) - Purchased Electricity (BC Hydro)		
	Scope 3 (Indirect Emissions from Other Sources) - Stationery, Student & Employee Travel, Employee Commuting		
Consolidation Approach	Operational Control: Accounting for 100% of emissions from regular operations over which the company has operational control.		
Primary Measurement	Carbon Dioxide Equivalent (CO ₂ e)		
Reporting Guidelines	Aligned with those defined in <i>The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, Revised Edition (The GHG Protocol, www.ghgprotocol.org)</i> . Emissions factors reviewed & approved by Offsetters.		

Inventory Results



Carbon Footprint (Summary)



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2016 Carbon Footprint Report
Prepared by: **synergy**

Total emissions: **873.1** tCO₂e

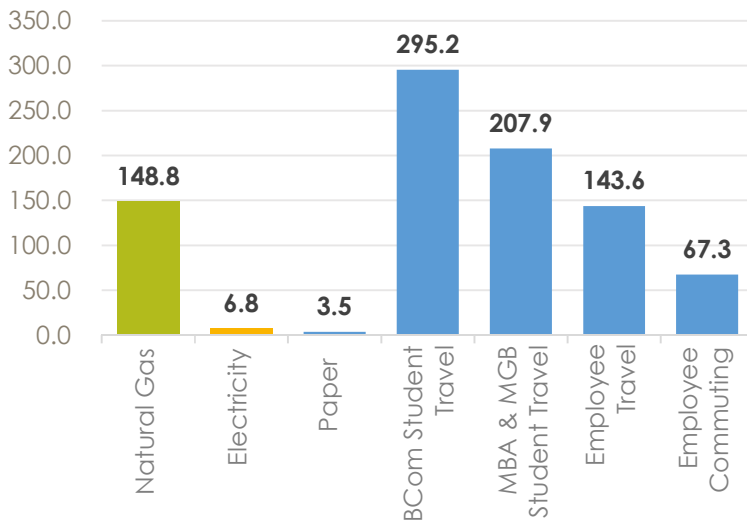
Offset cost*: **\$14,281 - \$17,851**

Total emissions for 2016 come to 873.1 tCO₂e, an increase of 5% over the previous year. Since the baseline year of 2010, emissions have been reduced by 34%.

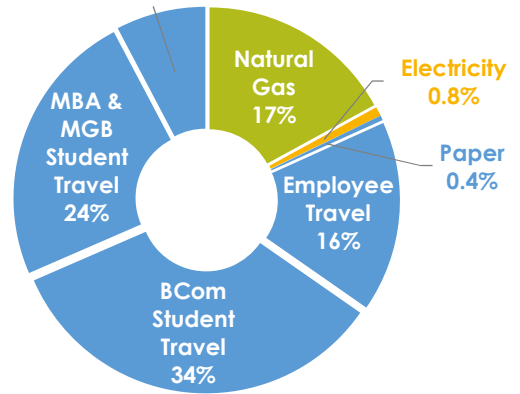
*Note: Cost is for Scope 3 emissions and based on offset price range of \$20-\$25/ tonne

Carbon Footprint (By Activity)

Emissions by Activity (tCO₂e)



Employee Commuting 8%



Scope 1 | Scope 2 | Scope 3

Carbon Footprint (Historical)

Annual Emissions (tCO₂e)



	tCO ₂ e Per Year	Change since Baseline	
		tCO ₂ e	Percent
2010	1,327.9		
2011	1,515.4	+187.5	+14.1%
2012	1,098.0	-229.9	-17.3%
2013	1,052.6	-275.2	-20.7%
2014	853.4	-474.5	-35.7%
2015	831.2	-496.7	-37.4%
2016	873.1	-454.8	-34.2%



2,754.3

Barrels of Oil



231.9

Cars per Year



2.2

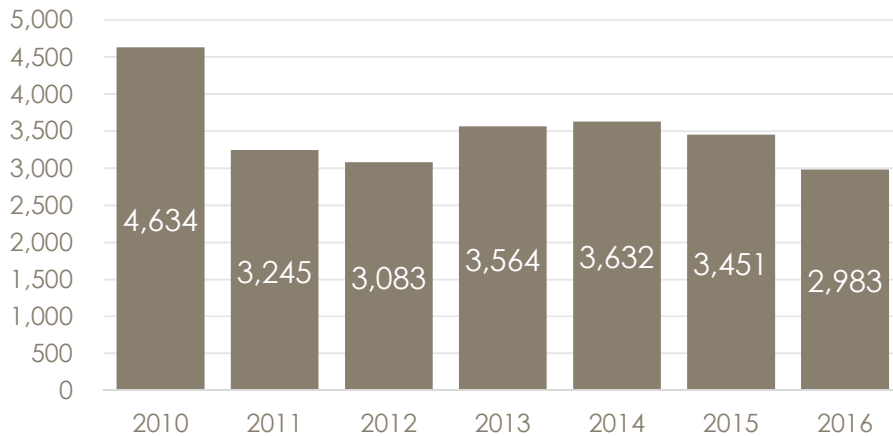
tCO₂e per person

tCO₂e (Total)

873.1

Natural Gas

Natural Gas (GJ)



Analysis

Gustavson has office and classroom space in two UVic buildings which are both on a natural gas heating loop. Natural gas consumption has been on the decline since the 2010 baseline as the result of overall improvements to the HVAC system at UVic. In 2016, natural gas decreased 14% since last year and 36% since the 2010 baseline.

* The emissions from natural gas are offset by the University of Victoria

GJ/ft² **0.05**

tCO₂e **148.8***

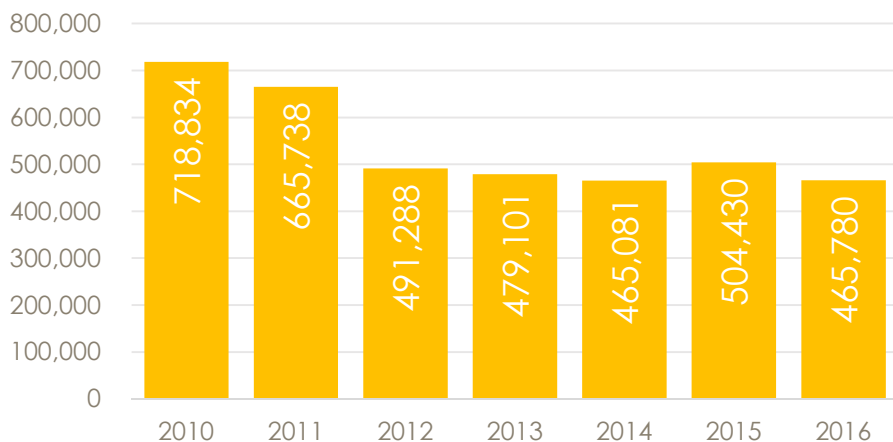
% of Total **17.0%**



32.4
Houses

Electricity

Electricity (kWh)



Analysis

Electricity use has declined 35% since the baseline year through lighting upgrades and educational initiatives by the University of Victoria to reduce electricity consumption. Electricity use at Gustavson decreased 8% over the previous year. This is likely due to efforts by employees and students to turn off unneeded lights and appliances to reduce electricity use.

* The emissions from electricity are offset by the University of Victoria

kWh / ft² **7.2**

tCO₂e **6.8***

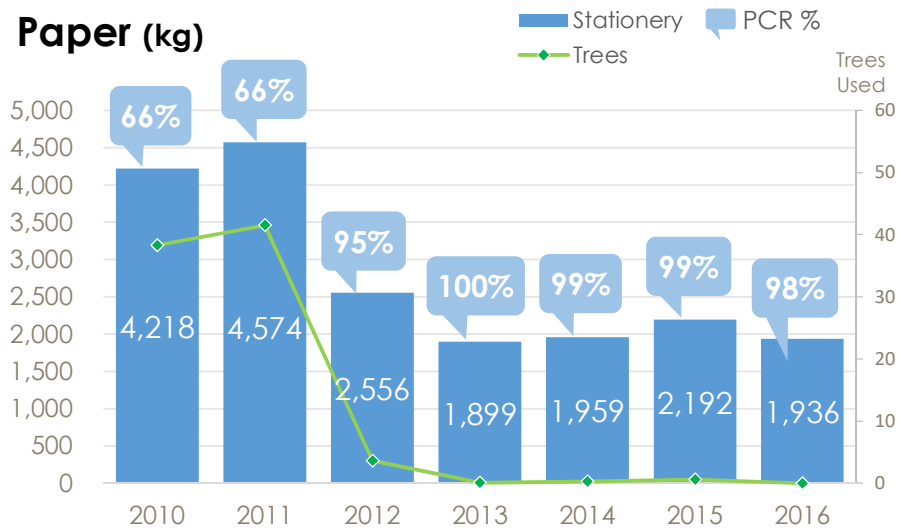
% of Total **0.8%**



42.3
Houses

Paper

Paper (kg)



Analysis

Paper use at Gustavson has a relatively low impact (3.5 tCO₂e) due to the purchase of 100% Post-Consumer Recycled (PCR) paper. Paper accounts for 0.4% of total emissions and requires less than 1 tree per year. In 2016, there were 117 fewer reams purchased, reducing emissions by 0.4 tCO₂e. Limiting photocopying and printing for meetings can reduce paper use further.

Note: Gustavson saved 35 trees this year by opting for 100% PCR paper over standard copy paper.
 * The emissions from paper are offset by the University of Victoria.

Treeless Content

98%

tCO₂e

3.5*

% of Total

0.4%

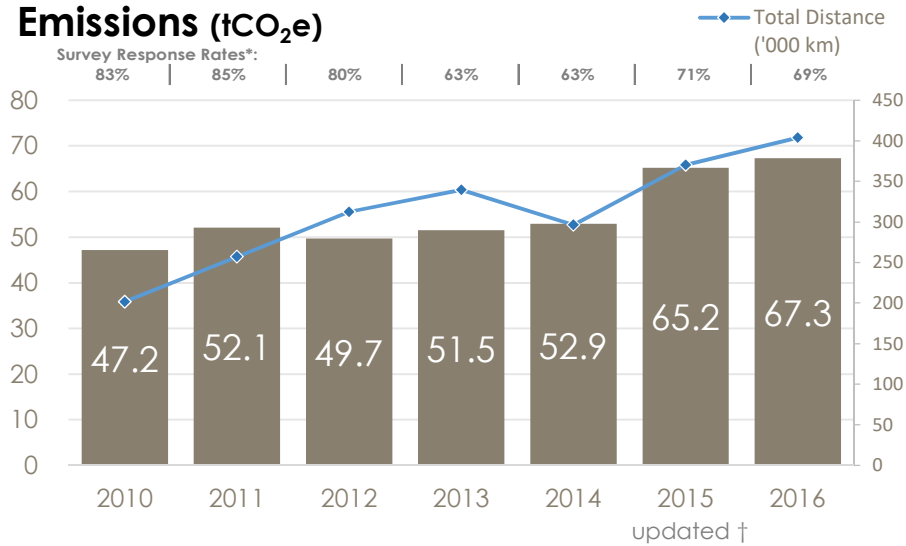


0.8

Trees / Year

Employee Commuting

Emissions (tCO₂e)

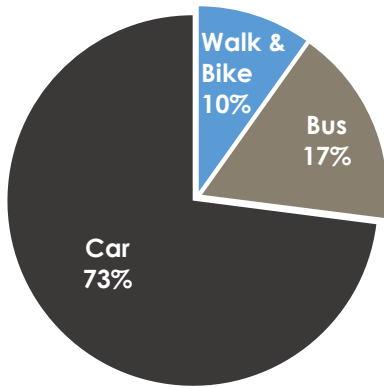


Analysis

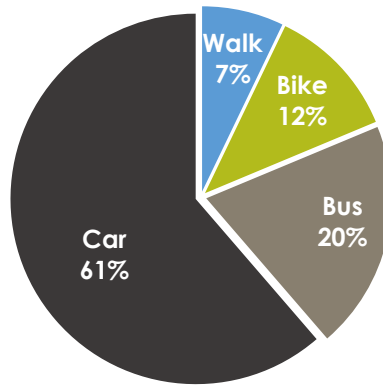
Staff commuting accounts for 7.7% of Gustavson's total carbon footprint. Since the baseline, emissions have increased by 43% while total distance has doubled. Since 2015, the number of employees commuting to Gustavson has increased 18%, while commuting emissions have increased just 3%. These results are due to more employees commuting by low emissions methods (walk, bike, bus, e-car).

* Employee commuting data has been extrapolated each year to account for missing surveys.
 † In the 2015 report, emissions were incorrectly reported as 46.3 tCO₂e. This has been updated.

Commuting Percentages by Method per Week



Baseline (2010)



Current (2016)

Analysis (Breakdown)

Since 2010, there has been a trend towards more sustainable commuting methods, such as walking, biking and public transit. This year, 39% of commutes per week were made by low-emission methods, up from 27% in 2010.

The breakdown of commuting methods is similar to 2015, with slightly more staff driving this year (there has been a 2% shift from biking to driving).

Several new options for reduced single-occupant vehicle use are outlined in the 'Moving Forward' section on Page 8.

Average kgCO ₂ e/km	0.23
Low-Emission Commuting %	27%

Average kgCO ₂ e/km	0.17
Low-Emission Commuting %	39%

tCO₂e / FTE **0.17**

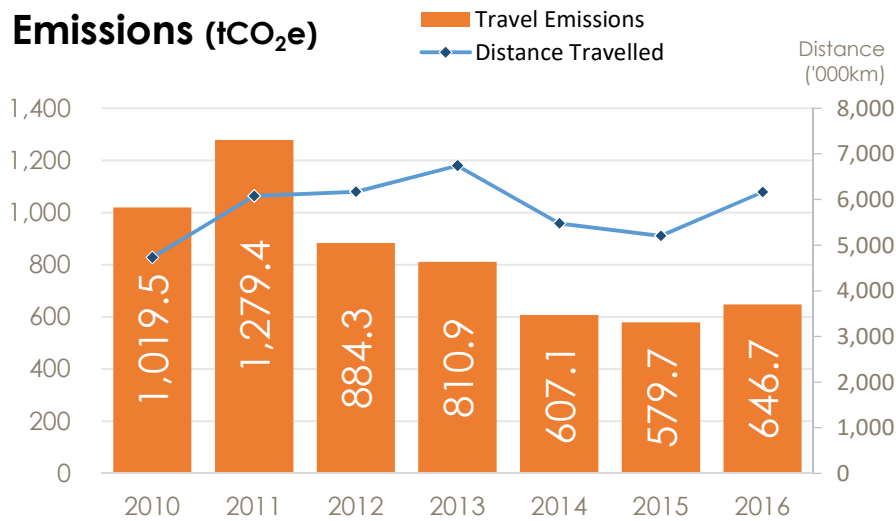
tCO₂e **67.3**

% of Total **7.7%**

 **17.9**
Cars / Year

Travel

Emissions (tCO₂e)



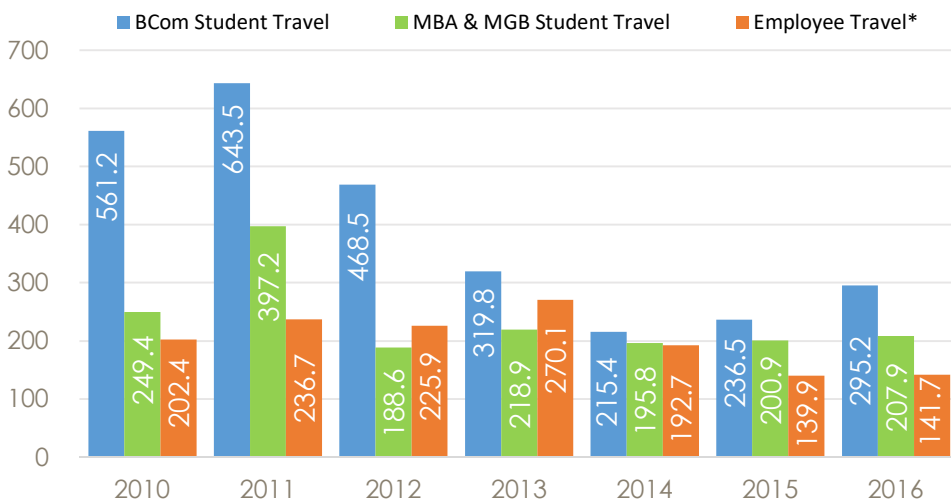
Analysis

Travel is the highest contributor to Gustavson's carbon footprint, at 74% of total emissions. Emissions have increased this year due to an 18% rise in the overall distance travelled.

The extra distance travelled is due to an increase in employees at Gustavson, as well as the number of students participating in the BCom exchange program.

Note: The emissions reduction in 2012 is due to switching from UK emissions factors to factors recommended for BC. All years after 2012 use annually updated BC emissions factors.

Flight Emissions by Dept. (tCO₂e)



Analysis (Breakdown)

The distance travelled by each group of travellers, and the associated emissions, has increased over last year. The greatest difference was in BCom travel, which had 42 more participants this year and saw a 32% increase in travel. There were less travellers and fewer flights in the MBA & MGB category this year, however the distance travelled increased.

Previous (2015)

# of Flights	754
Average Distance per Flight (km)	6,889

Current (2016)

# of Flights	877
Average Distance per Flight (km)	7,019

2016 Year	Distance (km)	# of Flights
Employees	1,354,405	339
BCom	2,817,052	335
MBA & MGB	1,983,883	203
Total	6,155,339	877

* Employee Travel in this chart is for flights only, and does not include emissions from reimbursed mileage ~1.86 tCO₂e which are included in the total travel emissions.

† The average for Employee Travel is based on total number of employees, while the averages for students are based on numbers of students who participate in travel programs.

tCO₂e / Employee **1.20†**

tCO₂e / BCom Student **1.75**

tCO₂e / MBA & MGB Student **1.76**

Total tCO₂e 646.7
74.1%

Carbon Reduction Strategy

The Gustavson School of Business has measured and reported its carbon emissions over the past eight years, through the work of its Centre for Social and Sustainable Innovation (CSSI). The school reports on scopes 1, 2 and 3 of carbon emissions related to its operations, including employee commuting and travel by employees and students. Since the baseline year, emissions have been reduced 34%. This has been achieved through increased energy efficiency, a reduction in paper purchasing, and a shift towards more sustainable commuting methods by employees at Gustavson.

In 2016, Gustavson achieved significant reductions in natural gas, electricity and paper- totalling a saving of 27 tCO₂e. The largest share of Gustavson's emissions is from air travel, which accounts for 74% of the total footprint. Due to an increased uptake in student travel programs, more flights were taken which contributed to the 5% increase in overall emissions. As an international business school, air travel is an essential component of Gustavson's operations. By implementing a travel policy, the school can limit unnecessary travel, encourage more sustainable methods and reduce emissions going forward. Any travel that cannot be reduced could be offset through the purchase of carbon credits. Offsetting student and employee travel (at a cost of \$14,281 - \$17,851), would make Gustavson among the first Carbon Neutral educational institutions in the world.

Achievements

- > Natural gas use has been reduced 36% since 2010.
- > Due to lighting upgrades and educational initiatives at UVic, electricity use has been reduced by 35% since 2010.
- > Both natural gas and electricity intensity (usage/ft²) are lower than their respective industry averages.
- > Improvements to energy efficiency and reduced paper consumption has led to a total reduction of 27 tCO₂e.
- > A more efficient system has been implemented for tracking employee and student travel.
- > Paper use has been reduced 12% since 2015. By opting for 100% PCR copy paper (rather than 30%), Gustavson has saved 35 trees this year.
- > Engagement session carried out at Gustavson to share information on offsets with employees.

Moving Forward

- > Explore options for offsetting emissions from student & employee travel.
- > Implement a school travel policy to discourage unnecessary air travel, and encourage more low-emissions methods.
- > Conduct waste audit to determine the significance of waste emissions at Gustavson. If waste emissions are 5% or more of Gustavson's total footprint, increase scope of next report to include waste.
- > Encourage employees to make use of the commuting incentives at UVic:
 - For full-time, continuing employees, UVic will pay the annual fee for Modo car-sharing.
 - UVic employees also receive a discounted \$35/year membership at Zipcar.
 - Vehicles may be rented from UVic for university business. Rides can also be organized through UVic's rideshare program.
 - Monthly bus passes are available to most employees at less than half the price of a regular pass.

Information on Inventory Uncertainty

* The inventories for years 2010 to 2014 were completed by EcoCentric and ColdStream Consulting, and restated with the methodology and emissions factors of Synergy Enterprises.

* Natural gas use in buildings was estimated using floor area.

* Gustavson's first inventory was completed in 2009. Due to changes in scope and incomplete data, 2010 is considered the baseline year.

Emissions References

Emission Factor	Reference Document(s)/ Years Referenced
BC Natural Gas	National Inventory Report- Part 2 (2011, 2013, 2016)
BC Electricity	National Inventory Report- Part 3 (2013, 2016)
Paper	Environmental Paper Network (2010); BC Best Practices (2014, 2016/17)
Flights	DEFRA UK (2010, 2011); BC Best Practices (2012, 2013, 2014, 2016/17)
Reimbursed Mileage	Internal Factors (2010-2014); National Inventory Report- Part 2 (2013, 2016)
Employee Commuting	Internal Factors (2010-2014); National Inventory Report- Part 2 (2013, 2016); BC Best Practices (2014, 2016/17)

1. 2016/17 B.C. Best Practices Methodology for Quantifying Greenhouse Gas Emissions
<http://www2.gov.bc.ca/gov/content/environment/climate-change/policy-legislation-programs/carbon-neutral-government/measure>

2. Environment Canada's National Inventory Report (1990-2014); Part 2 & 3.
http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/can-2016-nir-14apr16.zip

3. Department for Environment, Food & Rural Affairs (UK) Carbon Factors
<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2016>

4. Intergovernmental Panel on Climate Change (Global Warming Potentials)
http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html

All emissions factors are reviewed and approved by Offsetters (www.offsetters.ca) on an annual basis.

Glossary of Terms

Term	Description
GHG	Greenhouse Gas (emissions): Atmospheric gasses contributing to the greenhouse effect, including Carbon Dioxide (CO ₂), Methane (CH ₄), Nitrous Oxide (N ₂ O), etc.
GJ	Gigajoule: Unit of natural gas equal to 26.137 m ³ or 0.947 MMBtu
kWh	Kilowatt-Hour: Common unit for measuring electrical consumption
m ³	Cubic Meter: Unit of measurement equal to 1,000 Litres
PCR%	Post-Consumer Recycled Content (as a percentage)
psg-km	Passenger-Kilometer: Unit separating total emissions between passengers per km
Ream	Standard unit of paper measurement equal to 500 sheets (with 10 reams in one box)
tCO ₂ e	Tonnes of Carbon Dioxide Equivalent: GHGs have different warming potentials, measured collectively as CO ₂ equivalent (hence "e")
t-km	Tonne-kilometer: A unit of measurement used in shipping

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The logo for Synergy, featuring the word "synergy" in a lowercase, sans-serif font. A small green leaf icon is positioned above the letter 'y'.