

Air Travel Carbon Audit: A Study of the University of Calgary International (UCI)

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Research Question

How can UCI expand its student mobility program and global partnerships while working to mitigate its institutionally driven air travel emissions impact?

Recommendations

- Accurate emissions tracking through data management
- Voluntary carbon offsets
- Prioritize economy travel
- Higher efficiency airlines

Average fuel economy of select airlines

Airline	Average fuel economy (pax-km/L)
Norwegian	44
WOW air	39
SWISS air	37
KLM	36
Turkish	35
Air France	35
Thomas Cook	35

Source: Graver, B., & Rutherford, D. (2018). Transatlantic Fuel Efficiency Ranking, 2017. *The International Council on Clean Transportation (ICCT)*

Study Relevance

- Commercial aviation- approximately 2-5 % of all greenhouse gas emissions
- University of Calgary International (UCI) facilitates international travel for the purpose of global partnerships and student mobility program
- University of Calgary Climate Action Plan- advance understanding of institutionally driven scope 3 emissions

Methodology

- Methodology based on relevant parameters
- Key consideration- radiative forcing factor (multiplier that accounts for increased effect of greenhouse gases at high altitude)
- Two methodologies selected- atmosfair and UK Department of Food, Environment, and Rural Affairs (DEFRA) flight emission factors (shown below)
- Calculations performed on 2018 and 2019 datasets

Analysis & Results

Travel to Asia produced the majority of emissions for executive leadership and staff travel, travel to Europe produced the most emissions for student mobility program

Executive Leadership & Staff Travel Emissions by World Region

Region	Emissions (tonnes) using distance- based emissions factor	Emissions (tonnes) using atmosfair
North America	8.79	11.89
Asia	66.17	104.04
Australia	5.13	8.60
Europe/Middle East/Africa	15.04	18.08
Total	95.13	142.61

Source: Tejani, Aleem (August 2023). Air Travel Carbon Audit: A Study of University of Calgary International

Student Mobility Program Emissions by World Region

Region	Emissions using DEFRA distance- based emissions factors (tonnes)	Emissions using atmosfair methodology (tonnes)
Europe	2677	3407
Asia	2265	3179
North America	579	697
Africa	514	798
Oceania	611	959
South America/Central America/Caribbean	416	515
Total	7062	9555

Source: Tejani, Aleem (August 2023). Air Travel Carbon Audit: A Study of University of Calgary International