1495 UNIVERSITY OF ABERDEEN | CELEBRATING 525 YEARS 1495 – 2020

ABERDEEN 2040

# Student Travel to Study Emissions

Estrid Jonsson – University of Aberdeen Net Zero Intern

19/04/2023

# Overview

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- What was the Challenge?
- Final Calculation Methodology
- Development of Methodology
- Calculation Workbook
- Long-term Tracking and Comparison of Annual Emissions
- Q/A

# Introduction

# Estrid Jonsson

## University of Aberdeen Intern

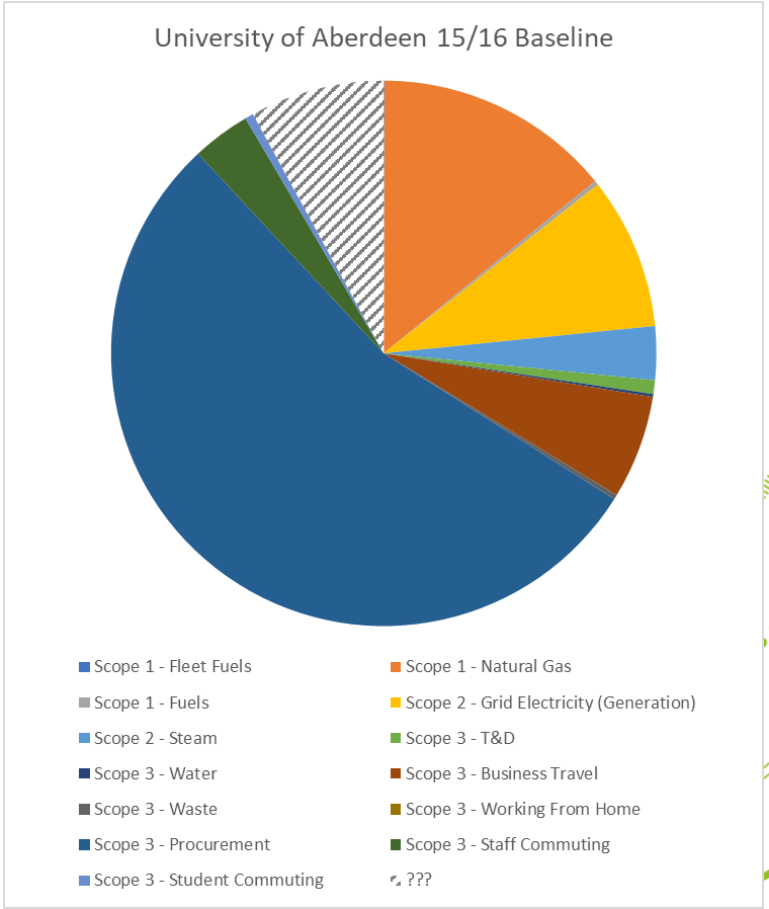
- 3rd year student - MEng Civil and Environmental Engineering
- University of Aberdeen InternPlus Scheme – 6 month internship, 15 hours/week
- Student travel to study emissions calculation methodology research project

# What was the Challenge?

# What was the Challenge?

## Missing Data in our Emissions Profile

- Aberdeen 2040 target of achieving Net-Zero before 2040.
- Expanding reporting boundaries and baseline to include additional Scope 3 emission sources.
- Student travel to study emissions was identified as a key missing source.
- Sector guidance or calculation methodology not available



# Final Calculation Methodology

# Final Calculation Methodology

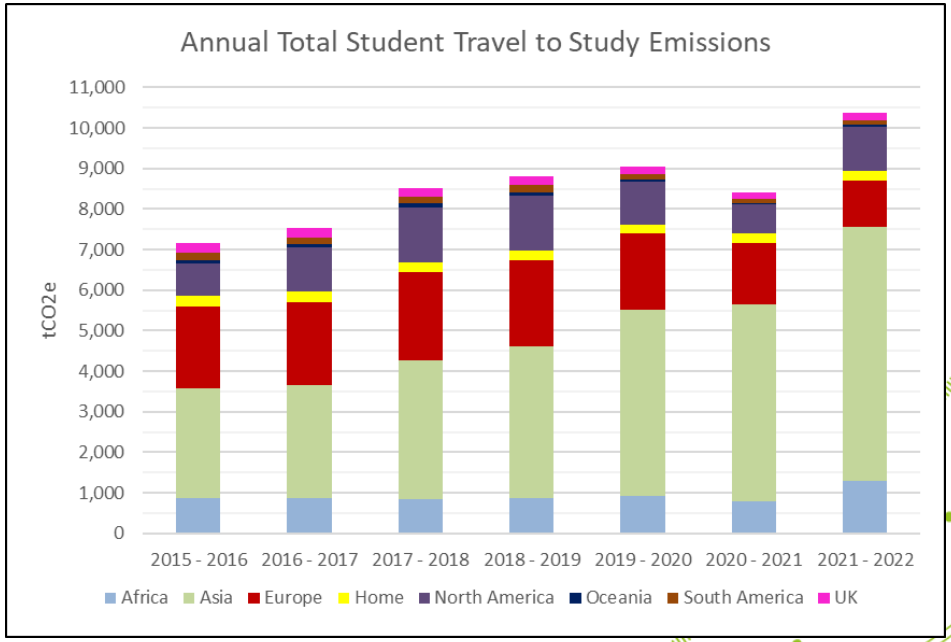
## The final methodology is summarised in the table below

| Regions | Starting Location | Travel mode | Number of Return Trips | Journey |
|---|---|---|---|---|
| Africa | Country Capital | Economy passenger, Long-haul flight | 1 | London then to Aberdeen |
| Asia | | | | |
| North America | | | | |
| South America | | | | |
| Oceania | | | | |
| Europe | | Economy passenger, Short-haul flights | | |
| Home/UK | | 50/50 split, national rail and average car | | Direct to Aberdeen |

# Results of Calculation

By using an agreed methodology, confidence in emissions data and trends is strong and can be used to measure the University's progression towards net-zero.

- Total emissions
- Total student population
- Total distance travelled



# Development of the Methodology

# Methodologies for Country Starting Point Locations

- Capital city
- Most populated city
- Mid-point
- Furthest away point
- Busiest travel points
    - Airports
    - Train stations

| Country | Capital | Most populated city | Geographical mid-point | Geographical furthest away point | Busiest Airport | Busiest Train Station |
|---|---|---|---|---|---|---|
| China | Beijing<br>**7,790.7 km** | Shanghai<br>**8,859.0 km** | **7,600.5 km** | **9,367.5 km** | Beijing Capital International Airport<br>**7,785.7 km** | |
| France | Paris<br>**969.9 km** | Paris<br>**969.9 km** | **1,251.4 km** | **1,665.6 km** | Paris Charles de Gaulle Airport<br>**957.9 km** | Gare du Nord<br>**967.6 km** |

# Methodologies for Country Starting Point Locations

- Capital city
- Most populated city
- Geographical mid-point
- Geographical furthest away point
- Busiest travel points
    - Airport
    - Train station

# Travel Modes – Initial Assumptions

## The following travel modes were initially assumed in calculations

**Home/UK:** 50/50 split between rail and car

- Initial assumption that 100% of students drive, however, due to Aberdeen's rail connections and sector assumptions, this was updated to a 50/50 split between the two methods.

**Europe:** Average passenger, short-haul flights

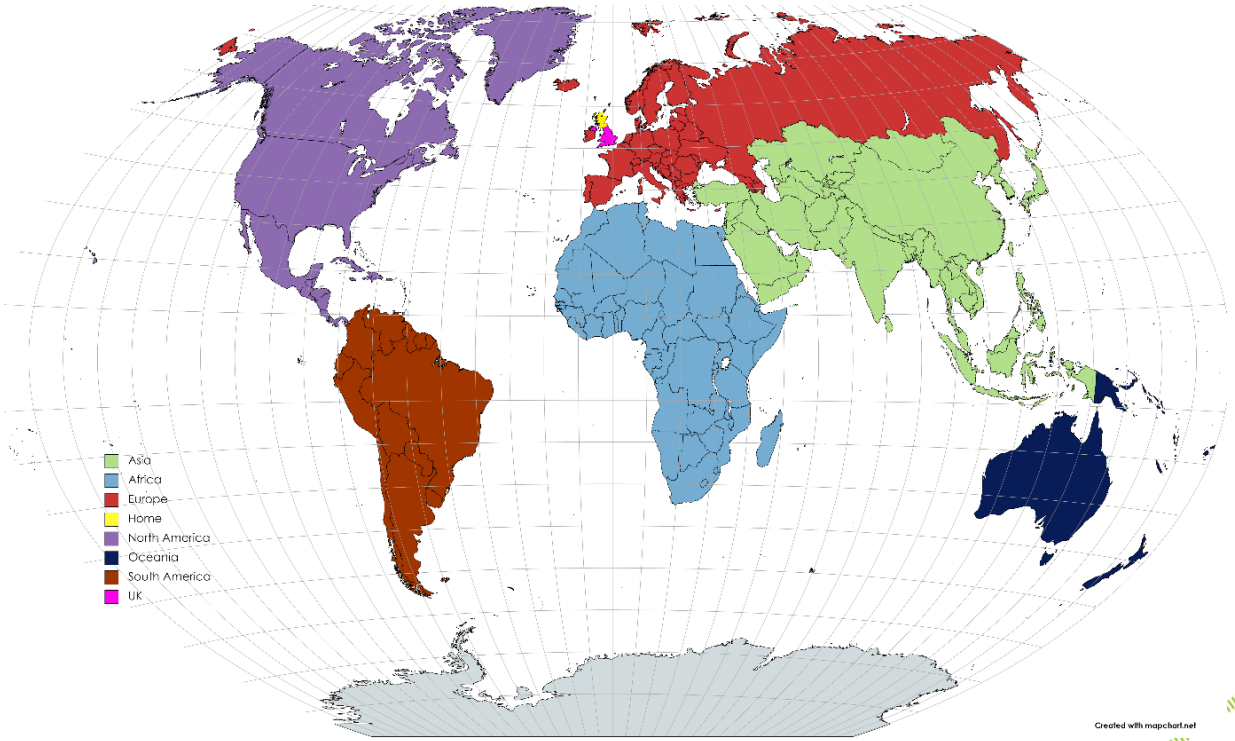
- At first, trains were considered as an option, but after a cost analysis and discussions within the sector, assuming all students travel by airplane was agreed to be more realistic.

**Africa/Asia/North America/South America/Oceania:** Average passenger, long-haul flight

- It was assumed that all students outside UK and Europe will fly.

# Travel Modes

## Regions




*Home – Scotland
**UK – England, Wales, Northern Ireland and the Crown Dependencies

# Sector Review / EAUC Contact

*"…….. if there's any studies concerning modes of travel based on student's home country or something similar which would be helpful in the calculation of our student travel emissions……"*

- *London School of Hygiene and Tropical Medicine*
    - Provided helpful surveys
- *University of Strathclyde*
    - Airports in capital city
        - No collection of travel mode data from students outside of Scotland
- *University of Plymouth*
    - Only looking at UK students, basing it on post codes
        - *They are calculating emissions based on average car and 4 trips per year*

# Sector Review - University of Edinburgh contact

## Student travel emission calculation methodology

- UK Domestic would travel by train - considering the relative numbers/ distances we're talking about (compared to international students), this didn't make a significant difference to the total amount of carbon produced
- Non-domestic would fly, and the flight was based on one return, direct flight, to the capital city of their home country.
    - Received the student numbers by country (both actual and expected in future years) from the central Strategic Planning team.
    - Didn't consider flight routing (e.g. Beijing - Edinburgh could be Beijing - Dubai - London - Edinburgh) which could add additional carbon, as there are too many variables here.
- Recommended the development of travel survey

# Final Assumptions

## Following sector engagement and internal discussions, the following final assumptions were applied to the methodology:

Number of trips

- Assumed 1 return trip (this may change following student surveys)

Emission factors

- Rail: National rail
- Car: Average car, unknown fuel
- Short-haul flight: Economy passenger, with RF*
- Long-haul flight: Economy passenger, with RF*

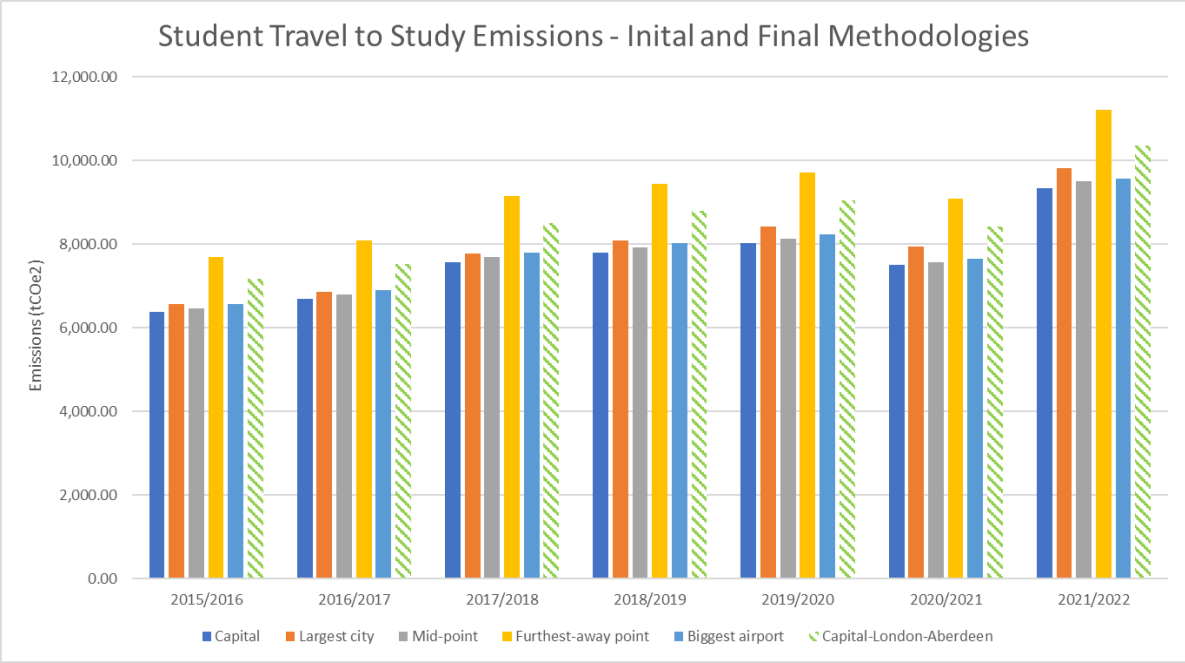
Change overs of flights

- All international flights will route via London

*Radiative forcing (RF) is a measure of the additional environmental impact of aviation. These include emissions of nitrous oxides and water vapour when emitted at high altitude. Organisations should include the influence of radiative forcing RF in air travel emissions to capture the maximum climate impact of their travel habits. However, it should be noted that there is very significant scientific uncertainty around the magnitude of the additional environmental impacts of aviation.

# Impact of Updated Assumptions

## Flight Routing through London instead of “as the crow flies”



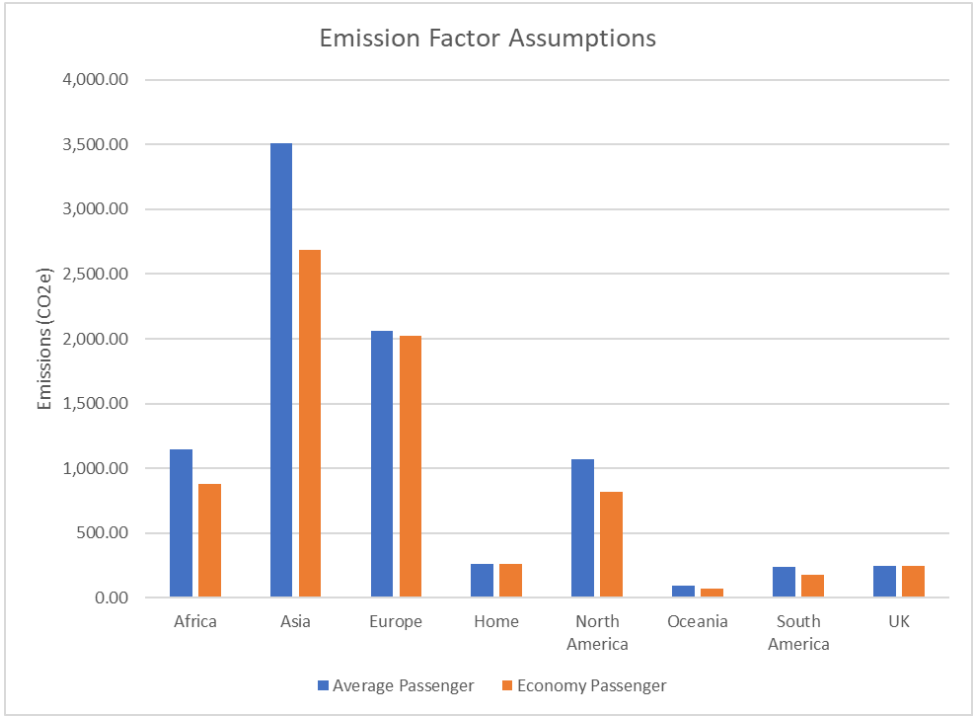
# Impact of Updated Assumptions

## Flight Routing through London instead of “as the crow flies”

| Year | Capital to London to Aberdeen Methodology Emissions (tCO2e) | Percentage Difference Compared to Chosen Methodology | | | | |
|---|---|---|---|---|---|---|
| | | Capital | Largest city | Geographical mid-Point | Geographical furthest-away point | Busiest Airport |
| 2015/2016 | 7,174.97 | -10.9% | -8.5% | -9.9% | 7.4% | -8.5% |
| 2016/2017 | 7,529.61 | -11.6% | -9.2% | -10.1% | 7.9% | -8.8% |
| 2017/2018 | 8,519.82 | -13.3% | -10.2% | -11.4% | 8.8% | -10.0% |
| 2018/2019 | 8,798.06 | -13.8% | -9.9% | -12.1% | 8.9% | -10.7% |
| 2019/2020 | 9,046.67 | -14.2% | -8.6% | -12.8% | 9.5% | -11.2% |
| 2020/2021 | 8,421.34 | -12.7% | -6.6% | -11.9% | 9.3% | -10.6% |
| 2021/2022 | 10,364.13 | -14.2% | -7.5% | -11.8% | 12.0% | -11.1% |

# Impact of Updated Assumptions

## Average Passenger Emission Factors to Economy Passenger Factors



# Calculation Workbook

| | | | |
|---|---|---|---|
| Written by: | Estrid Jonsson | Date: | 12/04/2023 |
| Reviewed by: | Rose Lyne | Date: | 12/04/2023 |
| Version: | 0.2 | Date: | 12/04/2023 |

UNIVERSITY OF ABERDEEN

**Student Travel Emissions Calulation Spreadsheet**

This spreadsheet calculates student travel emissions using domicile data.
The green cells are open to editing for the user, red cells should not be changed and yellow cells contain helpful comments for the calulations.

Before any calculations are made, please read the how-to guide which gives a detailed explanation on how to use this calculation sheet.

Calculations are started by getting domicile data of the student body, this is entered in the "Data" tab in order to start calculations.
Verify this domicile data in the "Verification of Data" tab and make any adjustments if needed.

Update the emission factors for the specified year in the "Emission Factors" tab. These GHG emission factors given by the government can be found here:
https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting
For any changes made to the orignial methodology, please update the number of trips and the split between travel modes for any countries.

To complete column D in the "Country Distances" tab, users should access http://ksglediteh.com/data-5.html to get distance from capital to layover location for all international countries. The distance between layover location and the institution entered into D39 in the "Read Me First" tab will then be added in the "Domicile Data" tab. For countries/territories which do not appear on the mentioned websites should be found using Google Maps.
For UK countries, the distance from their respective capitals to the university should be noted as the distance.

"Home" in this calculation sheet is assumed to be Scotland, however, this should be adjusted for the required country which the insitutions is situated in. Edits to this is made by changing the region of the respective home country to "Home" and assigning "UK" to the region of Scotland. Edits would have to be made under "Summaries" to update the Home summary to the required Home country.

As per guidance from the *Public Bodies and Climate Change Duties - Guidance on nature-based carbon reduction projcects (insetting and offsetting) and annual bodies duties reporting* document released by the Scottish Government on 27/02/2023, flexibility with regards to the number of journeys counted towards Scottish emissions is provided under "Domicile Data". 1 trip means a single journey between the student's home and the institution and 2 trips would imply a return journey.

Please note that all data is anonymised in this workbook, and since no individual student can be identified, there are no GDPR concerns.

For technical queries, please contact Rose Lyne at rose.lyne@abdn.ac.uk

**ENTER THE FOLLOWING DATA**

| | |
|---|---|
| **Institution Name:** | University of Aberdeen |
| **Flight Layover Location:** | London (UK) |
| **Distance from layover location to University (km):** | 641.9 |

Read Me First | Country Distances | Domicile Data | Emission Factors | Data | Verification of Data | Summaries

| Country | Region | Distance to layover location from country capital (km) | Number of students |
|---|---|---|---|
| Afghanistan | Asia | 5725 | 0 |
| Aland islands | Europe | 1569.14 | 1 |
| Albania | Europe | 1868 | 2 |
| Algeria | Africa | 1678 | 1 |
| American Samoa | Oceania | 15790.66 | 0 |
| Andorra | Europe | 955 | 0 |
| Angola | Africa | 6828.25 | 21 |
| Anguilla | North America | 6570.22 | 0 |
| Antigua and Barbuda | North America | 6581.18 | 1 |
| Argentina | South America | 11052 | 2 |
| Armenia | Europe | 3599 | 0 |
| Aruba | North America | 7534.11 | 0 |
| Australia | Oceania | 16981.83 | 10 |
| Austria | Europe | 1235.04 | 65 |
| Azerbaijan | Europe | 3969 | 30 |
| Bahamas | North America | 5104 | 0 |
| Bahrain | Asia | 5071.29 | 3 |
| Bangladesh | Asia | 8004.34 | 11 |
| Barbados | North America | 6778.77 | 1 |
| Belarus | Europe | 1871.61 | 5 |
| Belgium | Europe | 313 | 62 |

Comments: The distance should be updated to reflect the distance from the capital city to the chosen flight layover location.

| Country List | Domicile Data |
|---|---|
| Aland Islands | Aland Islands |
| Albania | Albania |
| | Albania |
| Algeria | Algeria |
| Angola | Angola |
| | Angola |
| | Angola |
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| | Angola |
| Antigua and Barbuda | Antigua and Barbuda |
| Argentina | Argentina |
| | Argentina |
| Australia | Australia |
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| | Austria |

Comments: Compile the domicile data received from registry into this sheet. Deleting any data which does not concern your calculations. Please make sure that the "Domicile" column remains as column B as this is necessary for calculations.

The Domicile data in column B is the student's home country.

Read Me First | Domicile Data | Emission Factors | **Data** | Verification of Data | Summaries

| Break_Ref | Appears in the domicile data |
|---|---|
| Aland Islands | 1 |
| Albania | 1 |
| Algeria | 1 |
| Angola | 1 |
| Antigua and Barbuda | 1 |
| Argentina | 1 |
| Australia | 1 |
| Austria | 1 |
| Azerbaijan | 1 |
| Bahrain | 1 |
| Bangladesh | 1 |
| Barbados | 1 |
| Belarus | 1 |
| Belgium | 1 |
| Bolivia | 1 |
| Botswana | 1 |
| Brazil | 1 |
| Brunei | 1 |
| Bulgaria | 1 |
| Cameroon | 1 |
| Canada | 1 |
| Canary Islands | 1 |
| Cayman Islands | 1 |
| Chile | 1 |
| China | 1 |
| Colombia | 1 |
| Costa Rica | 1 |
| Croatia | 1 |
| Cyprus - EU | 1 |
| Cyprus - Unspecified | 1 |
| Czech Republic | 1 |
| Denmark | 1 |
| Ecuador | 1 |
| Egypt | 1 |
| England | 1 |
| Estonia | 1 |
| Ethiopia | 1 |
| Faroe Islands | 1 |

Comments: By filtering away blanks from the "Break_Ref" column from the "Data" sheet, a list of all countries represented by students from that specific year is compiled. Copy this list in to the left of the "Appears in the domicile data" column. By comparing the countries in the data column to the domicile data, all countries should appear once. If not, the data from registry should be reviewed and compared to the domicile data to search for discreptancies. Note that "No data recorder" should be ignored as no calulation of distances can be made.

| | | | Unknown |
|---|---|---|---|
| Activity | Type | Unit | kg $CO_2e$ |
| Cars (by siz | | | |
| | Average car | km | 0.18695 |

Comments: Data concerning emission factors is reported for each year under the Deparment for Business, Energy & Industrial Strategy. Using the conversion factors: full set (for advanced users) for the appropriate year, the corresponding emission factors can be found on:
**https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting**
Please note that if, for example, calulations for the academic year 2015/2016 are made, emission factors for 2016 should be used, as a majority of the academic year falls within this year.

| Activity | Type | Unit | kg $CO_2e$ |
|---|---|---|---|
| Rail | National rail | passenger.km | 0.04885 |

| Activity | Type | Unit | kg $CO_2e$ |
|---|---|---|---|
| Bus | | | |
| | Coach | passenger.km | 0.02867 |

| Activity | Type | Unit | Total kg $CO_2e$ per unit |
|---|---|---|---|
| Ferry | | | |
| | Average (all passenger) | passenger.km | 0.11606 |

| | | | | With RF |
|---|---|---|---|---|
| Activity | Haul | Class | Unit | kg $CO_2e$ |
| Flights | Domestic, to/from UK | Average passenger | passenger.km | 0.27867 |
| | Short-haul, to/from UK | Economy class | passenger.km | 0.16508 |
| | Long-haul, to/from UK | Economy class | passenger.km | 0.14678 |

ABERDEE

Read Me First | Domicile Data | **Emission Factors** | Data | Verification of Data | Summaries

| | | | | | Percent Split Between Travel Modes | | | | | | | Carbon Emission Factors (kgCO2e/km) | | | | | | | Carbon Emissions (tCO2e) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Region | Distance to Aberdeen from capital (km) | Number of students | Trips per year | Car | Rail | Bus | Ferry | Domestic flight | Short-haul flight | Long-haul flight | Car | Rail | Bus | Ferry | Domestic flight | Short-haul flight | Long-haul flight | Car | Rail | Bus | Ferry | Domestic flight | Short-haul flight | Long-haul flight | Total emissions |
| Afghanistan | Asia | 6366.9 | 0 | 2 | | | | | | | 100.00% | 0 | 0 | 0 | 0 | 0 | 0 | 0.1468 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Aland islands | Europe | 2211.04 | 1 | 2 | | | | | | 100.00% | | 0 | 0 | 0 | 0 | 0 | 0.1651 | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.73 | 0.00 | 0.73 |
| Albania | Europe | 2509.9 | 2 | 2 | | | | | | 100.00% | | 0 | 0 | 0 | 0 | 0 | 0.1651 | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.66 | 0.00 | 1.66 |
| Algeria | Africa | 2319.9 | 1 | 2 | | | | | | | 100.00% | 0 | 0 | 0 | 0 | 0 | 0 | 0.1468 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.68 | 0.68 |
| American Samoa | Oceania | 16432.56 | 0 | 2 | | | | | | | 100.00% | 0 | 0 | 0 | 0 | 0 | 0 | 0.1468 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Andorra | Europe | 1596.9 | 0 | 2 | | | | | | 100.00% | | 0 | 0 | 0 | 0 | 0 | 0.1651 | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Angola | Africa | 7470.15 | 21 | 2 | | | | | | | 100.00% | 0 | 0 | 0 | 0 | 0 | 0 | 0.1468 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 46.05 | 46.05 |
| Anguilla | North America | 7212.12 | 0 | 2 | | | | | | | 100.00% | 0 | 0 | 0 | 0 | 0 | 0 | 0.1468 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Antigua and Barbuda | North America | 7223.08 | 1 | 2 | | | | | | | 100.00% | 0 | 0 | 0 | 0 | 0 | 0 | 0.1468 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.12 | 2.12 |
| Argentina | South America | 11693.9 | 2 | 2 | | | | | | | 100.00% | 0 | 0 | 0 | 0 | 0 | 0 | 0.1468 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6.87 | 6.87 |
| Armenia | Europe | 4240.9 | 0 | 2 | | | | | | 100.00% | | 0 | 0 | 0 | 0 | 0 | 0.1651 | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Aruba | North America | 8176.01 | 0 | 2 | | | | | | | 100.00% | 0 | 0 | 0 | 0 | 0 | 0 | 0.1468 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Australia | Oceania | 17623.73 | 10 | 2 | | | | | | | 100.00% | 0 | 0 | 0 | 0 | 0 | 0 | 0.1468 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 51.74 | 51.74 |
| Austria | Europe | 1876.94 | 65 | 2 | | | | | | 100.00% | | 0 | 0 | 0 | 0 | 0 | 0.1651 | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 40.28 | 0.00 | 40.28 |
| Azerbaijan | Europe | 4610.9 | 30 | 2 | | | | | | 100.00% | | 0 | 0 | 0 | 0 | 0 | 0.1651 | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 45.67 | 0.00 | 45.67 |
| Bahamas | North America | 5745.9 | 0 | 2 | | | | | | | 100.00% | 0 | 0 | 0 | 0 | 0 | 0 | 0.1468 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Bahrain | Asia | 5713.19 | 3 | 2 | | | | | | | 100.00% | 0 | 0 | 0 | 0 | 0 | 0 | 0.1468 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5.03 | 5.03 |
| Bangladesh | Asia | 8646.24 | 11 | 2 | | | | | | | 100.00% | 0 | 0 | 0 | 0 | 0 | 0 | 0.1468 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 27.92 | 27.92 |
| Barbados | North America | 7420.67 | 1 | 2 | | | | | | | 100.00% | 0 | 0 | 0 | 0 | 0 | 0 | 0.1468 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.18 | 2.18 |
| Belarus | Europe | 2513.51 | 5 | 2 | | | | | | 100.00% | | 0 | 0 | 0 | 0 | 0 | 0.1651 | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.15 | 0.00 | 4.15 |
| Belgium | Europe | 954.9 | 62 | 2 | | | | | | 100.00% | | 0 | 0 | 0 | 0 | 0 | 0.1651 | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 19.55 | 0.00 | 19.55 |
| Belize | North America | 9026.9 | 0 | 2 | | | | | | | 100.00% | 0 | 0 | 0 | 0 | 0 | 0 | 0.1468 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Benin | Africa | 5647.9 | 0 | 2 | | | | | | | 100.00% | 0 | 0 | 0 | 0 | 0 | 0 | 0.1468 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Bermuda | North America | 6190.38 | 0 | 2 | | | | | | | 100.00% | 0 | 0 | 0 | 0 | 0 | 0 | 0.1468 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Bhutan | Asia | 8280.85 | 0 | 2 | | | | | | | 100.00% | 0 | 0 | 0 | 0 | 0 | 0 | 0.1468 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Bolivia | South America | 10581.9 | 2 | 2 | | | | | | | 100.00% | 0 | 0 | 0 | 0 | 0 | 0 | 0.1468 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6.21 | 6.21 |
| Bosnia and Herzegovina | Europe | 2262.38 | 0 | 2 | | | | | | 100.00% | | 0 | 0 | 0 | 0 | 0 | 0.1651 | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Botswana | Africa | 9484.92 | 1 | 2 | | | | | | | 100.00% | 0 | 0 | 0 | 0 | 0 | 0 | 0.1468 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.78 | 2.78 |
| Brazil | South America | 9327.9 | 29 | 2 | | | | | | | 100.00% | 0 | 0 | 0 | 0 | 0 | 0 | 0.1468 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 79.41 | 79.41 |
| Virgin Islands (British) | North America | 7301.4 | 1 | 2 | | | | | | | 100.00% | 0 | 0 | 0 | 0 | 0 | 0 | 0.1468 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.14 | 2.14 |
| Brunei | Asia | 11906.44 | 10 | 2 | | | | | | | 100.00% | 0 | 0 | 0 | 0 | 0 | 0 | 0.1468 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 34.95 | 34.95 |
| Bulgaria | Europe | 2656.41 | 244 | 2 | | | | | | 100.00% | | 0 | 0 | 0 | 0 | 0 | 0.1651 | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 214.00 | 0.00 | 214.00 |

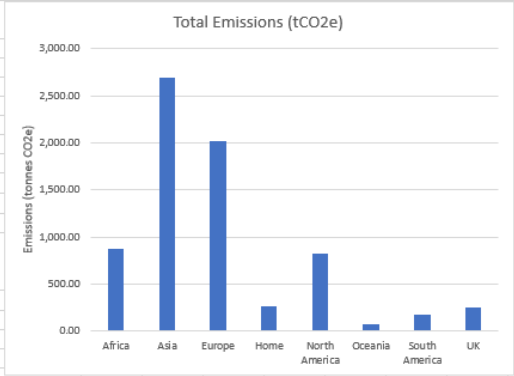
## Region Summaries

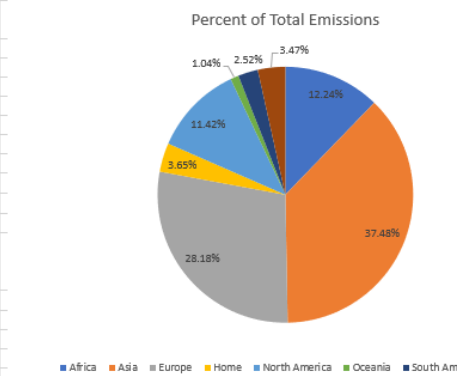
| Region | Total Emissions (TCO2e) |
|---|---|
| Africa | 878.23 |
| Asia | 2,688.98 |
| Europe | 2,021.92 |
| Home | 261.90 |
| North America | 819.31 |
| Oceania | 74.59 |
| South America | 181.06 |
| UK | 248.98 |
| TOTAL | 7,174.97 |

| Region | Number of Students |
|---|---|
| Africa | 489 |
| Asia | 1,021 |
| Europe | 3,018 |
| Home | 7,384 |
| North America | 408 |
| Oceania | 14 |
| South America | 64 |
| UK | 1,730 |
| TOTAL | 14,128 |

| Region | Percent of Total Emissions |
|---|---|
| Africa | 12.24% |
| Asia | 37.48% |
| Europe | 28.18% |
| Home | 3.65% |
| North America | 11.42% |
| Oceania | 1.04% |
| South America | 2.52% |
| UK | 3.47% |

| Region | Percent of Student Population |
|---|---|
| Africa | 3.46% |
| Asia | 7.23% |
| Europe | 21.36% |
| Home | 52.27% |
| North America | 2.89% |
| Oceania | 0.10% |
| South America | 0.45% |
| UK | 12.25% |



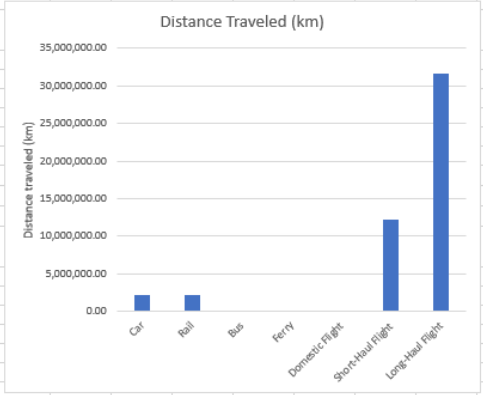

## Travel Modes Summaries

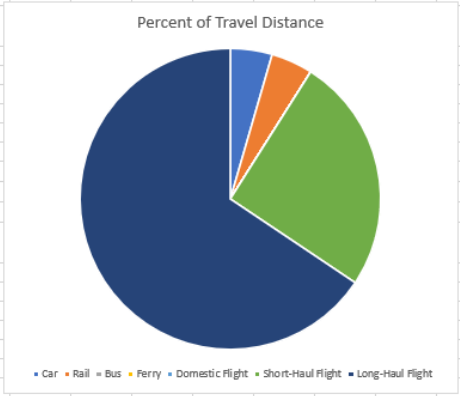
| Travel Mode | Distance Traveled (km) |
|---|---|
| Car | 2,166,614.24 |
| Rail | 2,166,614.24 |
| Bus | 0.00 |
| Ferry | 0.00 |
| Domestic Flight | 0.00 |
| Short-Haul Flight | 12,248,103.44 |
| Long-Haul Flight | 31,626,722.08 |
| TOTAL | 48,208,054.00 |

| Travel Mode | Emissions (tCO2e) |
|---|---|
| Car | 405.05 |
| Rail | 105.84 |
| Bus | 0.00 |
| Ferry | 0.00 |
| Domestic Flight | 0.00 |
| Short-Haul Flight | 2,021.92 |
| Long-Haul Flight | 4,642.17 |
| TOTAL | 7,174.97 |

| Travel Mode | Percent of Travel Distance |
|---|---|
| Car | 4.49% |
| Rail | 4.49% |
| Bus | 0.00% |
| Ferry | 0.00% |
| Domestic Flight | 0.00% |
| Short-Haul Flight | 25.41% |
| Long-Haul Flight | 65.60% |

| Travel Mode | Percent of Emissions |
|---|---|
| Car | 5.65% |
| Rail | 1.48% |
| Bus | 0.00% |
| Ferry | 0.00% |
| Domestic Flight | 0.00% |
| Short-Haul Flight | 28.18% |
| Long-Haul Flight | 64.70% |




| Region | Split Between Travel Modes (km) | | | | | | |
|---|---|---|---|---|---|---|---|
| | Car | Rail | Bus | Ferry | Domestic flight | Short-haul flight | Long-haul flight |
| Africa | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5,983,334.18 |

| | Split Between Travel Modes (km) | | | | | | |
|---|---|---|---|---|---|---|---|
| Region | Car | Rail | Bus | Ferry | Domestic flight | Short-haul flight | Long-haul flight |
| Africa | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5,983,334.18 |
| Asia | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 18,319,812.36 |
| Europe | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 12,248,103.44 | 0.00 |
| Home | 1,110,701.28 | 1,110,701.28 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| North America | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5,581,889.08 |
| Oceania | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 508,145.80 |
| South America | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1,233,540.66 |
| UK | 1,055,912.96 | 1,055,912.96 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | Percent Split Between Travel Modes (km) | | | | | | |
|---|---|---|---|---|---|---|---|
| Region | Car | Rail | Bus | Ferry | Domestic flight | Short-haul flight | Long-haul flight |
| Africa | 0.00% | 0.00% | #DIV/0! | #DIV/0! | #DIV/0! | 0.00% | 18.92% |
| Asia | 0.00% | 0.00% | #DIV/0! | #DIV/0! | #DIV/0! | 0.00% | 57.93% |
| Europe | 0.00% | 0.00% | #DIV/0! | #DIV/0! | #DIV/0! | 100.00% | 0.00% |
| Home | 51.26% | 51.26% | #DIV/0! | #DIV/0! | #DIV/0! | 0.00% | 0.00% |
| North America | 0.00% | 0.00% | #DIV/0! | #DIV/0! | #DIV/0! | 0.00% | 17.65% |
| Oceania | 0.00% | 0.00% | #DIV/0! | #DIV/0! | #DIV/0! | 0.00% | 1.61% |
| South America | 0.00% | 0.00% | #DIV/0! | #DIV/0! | #DIV/0! | 0.00% | 3.90% |
| UK | 48.74% | 48.74% | #DIV/0! | #DIV/0! | #DIV/0! | 0.00% | 0.00% |

| | Split Between Travel Modes Emissions (tCO2e) | | | | | | |
|---|---|---|---|---|---|---|---|
| Region | Car | Rail | Bus | Ferry | Domestic flight | Short-haul flight | Long-haul flight |
| Africa | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 878.23 |
| Asia | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2,688.98 |
| Europe | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2,021.92 | 0.00 |
| Home | 207.65 | 54.26 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| North America | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 819.31 |
| Oceania | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 74.59 |
| South America | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 181.06 |
| UK | 197.40 | 51.58 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | Percent Split Between Travel Modes (tCO2e) | | | | | | |
|---|---|---|---|---|---|---|---|
| Region | Car | Rail | Bus | Ferry | Domestic flight | Short-haul flight | Long-haul flight |
| Africa | 0.00% | 0.00% | #DIV/0! | #DIV/0! | #DIV/0! | 0.00% | 18.92% |
| Asia | 0.00% | 0.00% | #DIV/0! | #DIV/0! | #DIV/0! | 0.00% | 57.93% |
| Europe | 0.00% | 0.00% | #DIV/0! | #DIV/0! | #DIV/0! | 100.00% | 0.00% |
| Home | 51.26% | 51.26% | #DIV/0! | #DIV/0! | #DIV/0! | 0.00% | 0.00% |
| North America | 0.00% | 0.00% | #DIV/0! | #DIV/0! | #DIV/0! | 0.00% | 17.65% |
| Oceania | 0.00% | 0.00% | #DIV/0! | #DIV/0! | #DIV/0! | 0.00% | 1.61% |
| South America | 0.00% | 0.00% | #DIV/0! | #DIV/0! | #DIV/0! | 0.00% | 3.90% |
| UK | 48.74% | 48.74% | #DIV/0! | #DIV/0! | #DIV/0! | 0.00% | 0.00% |

Africa Summaries

Africa Summaries

| Countries | Total Emissions - Africa (tCO2e) | Percent of African Emissions | Percent of Total Emissions | Number of Students | Percent of African Student Population | Percent of Total Student Population |
|---|---|---|---|---|---|---|
| Algeria | 0.68 | 0.08% | 0.01% | 1.00 | 0.20% | 0.01% |
| Angola | 46.05 | 5.24% | 0.64% | 21.00 | 4.29% | 0.15% |
| Benin | 0.00 | 0.00% | 0.00% | 0.00 | 0.00% | 0.00% |
| Botswana | 2.78 | 0.32% | 0.04% | 1.00 | 0.20% | 0.01% |
| Burkina Faso | 0.00 | 0.00% | 0.00% | 0.00 | 0.00% | 0.00% |
| Burundi | 0.00 | 0.00% | 0.00% | 0.00 | 0.00% | 0.00% |
| Cameroon | 5.33 | 0.61% | 0.07% | 3.00 | 0.61% | 0.02% |
| Cape Verde | 0.00 | 0.00% | 0.00% | 0.00 | 0.00% | 0.00% |
| Canary Islands | 1.04 | 0.12% | 0.01% | 1.00 | 0.20% | 0.01% |
| Central African Republic | 0.00 | 0.00% | 0.00% | 0.00 | 0.00% | 0.00% |
| Chad | 0.00 | 0.00% | 0.00% | 0.00 | 0.00% | 0.00% |
| Comoros | 0.00 | 0.00% | 0.00% | 0.00 | 0.00% | 0.00% |
| Congo | 0.00 | 0.00% | 0.00% | 0.00 | 0.00% | 0.00% |
| Congo (Democratic Republic Of) | 0.00 | 0.00% | 0.00% | 0.00 | 0.00% | 0.00% |
| Djibouti | 0.00 | 0.00% | 0.00% | 0.00 | 0.00% | 0.00% |
| Egypt | 23.16 | 2.64% | 0.32% | 19.00 | 3.89% | 0.13% |
| Equatorial Guinea | 0.00 | 0.00% | 0.00% | 0.00 | 0.00% | 0.00% |
| Eritrea | 0.00 | 0.00% | 0.00% | 0.00 | 0.00% | 0.00% |
| Eswatini | 0.00 | 0.00% | 0.00% | 0.00 | 0.00% | 0.00% |
| Ethiopia | 5.76 | 0.66% | 0.08% | 3.00 | 0.61% | 0.02% |
| Gabon | 0.00 | 0.00% | 0.00% | 0.00 | 0.00% | 0.00% |
| Gambia | 3.01 | 0.34% | 0.04% | 2.00 | 0.41% | 0.01% |
| Ghana | 65.88 | 7.50% | 0.92% | 39.00 | 7.98% | 0.28% |
| Guinea | 0.00 | 0.00% | 0.00% | 0.00 | 0.00% | 0.00% |
| Guinea-Bissau | 0.00 | 0.00% | 0.00% | 0.00 | 0.00% | 0.00% |
| Ivory Coast | 1.65 | 0.19% | 0.02% | 1.00 | 0.20% | 0.01% |
| Kenya | 52.57 | 5.99% | 0.73% | 24.00 | 4.91% | 0.17% |
| Lesotho | 0.00 | 0.00% | 0.00% | 0.00 | 0.00% | 0.00% |
| Liberia | 0.00 | 0.00% | 0.00% | 0.00 | 0.00% | 0.00% |
| Libya | 9.61 | 1.09% | 0.13% | 11.00 | 2.25% | 0.08% |
| Madagascar | 0.00 | 0.00% | 0.00% | 0.00 | 0.00% | 0.00% |
| Malawi | 15.19 | 1.73% | 0.21% | 6.00 | 1.23% | 0.04% |
| Mali | 0.00 | 0.00% | 0.00% | 0.00 | 0.00% | 0.00% |
| Mauritania | 0.00 | 0.00% | 0.00% | 0.00 | 0.00% | 0.00% |
| Mauritius | 0.00 | 0.00% | 0.00% | 0.00 | 0.00% | 0.00% |
| Morocco | 0.00 | 0.00% | 0.00% | 0.00 | 0.00% | 0.00% |

# Long-term Tracking and Comparison of Annual Emissions

| | | | |
|---|---|---|---|
| **Written by:** | Estrid Jonsson | **Date:** | 12/01/2023 |
| **Reviewed by:** | Rose Lyne | **Date:** | |
| **Version:** | 0.1 | **Date:** | 12/01/2023 |

# Student Travel Emissions Calulation Tracking

This spreadsheet tracks student travel emissions using domicile data. This tracking sheet is made for tracking historic data of the Student Emissions Calculation Sheet.
The green cells are open to editing for the user, red cells should not be changed and yellow cells contain helpful comments for the calulations.
Before any calculations are made, please read the How-To-Guide which gives a detailed guide on how to use this calculation sheet.

Calcualtions are started by tracking data in Emission Factors, Domicile Data and Travel Data, after which, all calculations should be automatically updated.

For technical queries, please contact Rose Lyne at rose.lyne@abdn.ac.uk

| Emission source | Scope | Units | 2015 - 2016 | 2016 - 2017 | 2017 - 2018 | 2018 - 2019 | 2019 - 2020 | 2020 - 2021 | 2021 - 2022 | 2022 - 2023 | 2023 - 2024 | 2024 - 2025 | 2025 - 2026 | 2026 - 2027 | 2027 - 2028 | 2028 - 2029 | 2029 - 2030 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rail | Scope 3 | kg CO2e/passenger km | 0.04885 | 0.04678 | 0.04424 | 0.04115 | 0.03694 | 0.03549 | 0.03549 | | | | | | | | |
| Car | Scope 3 | kg CO2e/passenger km | 0.18695 | 0.18242 | 0.18064 | 0.1771 | 0.1714 | 0.17148 | 0.17067 | | | | | | | | |
| Bus | Scope 3 | kg CO2e/passenger km | 0.02867 | 0.0278 | 0.02801 | 0.02779 | 0.02732 | 0.02684 | 0.02733 | | | | | | | | |
| Ferry | Scope 3 | kg CO2e/passenger km | 0.116063 | 0.116112 | 0.112873 | 0.112863 | 0.112864 | 0.112862 | 0.112862 | | | | | | | | |
| Domestic Flight | Scope 3 | kg CO2e/passenger km | 0.27867 | 0.26744 | 0.29832 | 0.25493 | 0.2443 | 0.24587 | 0.24587 | | | | | | | | |
| Short-haul flight | Scope 3 | kg CO2e/passenger km | 0.16508 | 0.15845 | 0.1597 | 0.15573 | 0.15298 | 0.15102 | 0.15102 | | | | | | | | |
| Long-haul flight | Scope 3 | kg CO2e/passenger km | 0.14678 | 0.15119 | 0.16279 | 0.14981 | 0.14615 | 0.14787 | 0.14787 | | | | | | | | |

| Country | Region Classification | Student Numbers | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2015-2016 | 2016-2017 | 2017-2018 | 2018-2019 | 2019-2020 | 2020-2021 | 2021-2022 | 2022-2023 | 2023-2024 | 2024-2025 | 2025-2026 | 2026-2027 | 2027-2028 | 2028-2029 | 2029-2030 |
| Afghanistan | Asia | 0 | 0 | 0 | 0 | 2 | 1 | 0 | | | | | | | | |
| Aland islands | Europe | 1 | 1 | 1 | 1 | 0 | 0 | 0 | | | | | | | | |
| Albania | Europe | 2 | 1 | 0 | 2 | 0 | 2 | 2 | | | | | | | | |
| Algeria | Africa | 1 | 2 | 2 | 1 | 3 | 1 | 1 | | | | | | | | |
| American Samoa | Oceania | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| Andorra | Europe | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| Angola | Africa | 21 | 30 | 32 | 32 | 23 | 10 | 7 | | | | | | | | |
| Anguilla | North America | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| Antigua and Barbuda | North America | 1 | 1 | 1 | 1 | 1 | 0 | 0 | | | | | | | | |
| Argentina | South America | 2 | 1 | 0 | 5 | 2 | 3 | 1 | | | | | | | | |
| Armenia | Europe | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| Aruba | North America | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| Australia | Oceania | 10 | 14 | 14 | 18 | 9 | 5 | 6 | | | | | | | | |
| Austria | Europe | 65 | 69 | 69 | 68 | 51 | 32 | 31 | | | | | | | | |
| Azerbaijan | Europe | 30 | 22 | 21 | 13 | 15 | 8 | 11 | | | | | | | | |
| Bahamas | North America | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| Bahrain | Asia | 3 | 6 | 6 | 6 | 5 | 10 | 11 | | | | | | | | |
| Bangladesh | Asia | 11 | 8 | 9 | 12 | 18 | 36 | 278 | | | | | | | | |
| Barbados | North America | 1 | 2 | 4 | 2 | 1 | 1 | 1 | | | | | | | | |
| Belarus | Europe | 5 | 1 | 1 | 1 | 1 | 0 | 0 | | | | | | | | |
| Belgium | Europe | 62 | 67 | 69 | 65 | 47 | 44 | 44 | | | | | | | | |
| Belize | North America | 0 | 0 | 0 | 0 | 1 | 0 | 2 | | | | | | | | |
| Benin | Africa | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| Bermuda | North America | 0 | 1 | 1 | 3 | 1 | 1 | 1 | | | | | | | | |
| Bhutan | Asia | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| Bolivia | South America | 2 | 5 | 2 | 5 | 1 | 1 | 3 | | | | | | | | |
| Bosnia and Herzegovina | Europe | 0 | 0 | 0 | 0 | 1 | 1 | 1 | | | | | | | | |
| Botswana | Africa | 1 | 2 | 3 | 4 | 3 | 3 | 3 | | | | | | | | |
| Brazil | South America | 29 | 21 | 21 | 22 | 20 | 9 | 7 | | | | | | | | |
| Virgin Islands (British) | North America | 1 | 1 | 1 | 0 | 0 | 0 | 0 | | | | | | | | |
| Brunei | Asia | 10 | 6 | 7 | 8 | 10 | 9 | 7 | | | | | | | | |
| Bulgaria | Europe | 244 | 187 | 185 | 196 | 173 | 146 | 98 | | | | | | | | |
| Burkina Faso | Africa | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| Burundi | Africa | 0 | 1 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| Cambodia | Asia | 0 | 0 | 0 | 0 | 2 | 2 | 2 | | | | | | | | |
| Cameroon | Africa | 3 | 7 | 5 | 4 | 5 | 3 | 1 | | | | | | | | |
| Canada | North America | 68 | 75 | 80 | 78 | 73 | 47 | 61 | | | | | | | | |
| Cape Verde | Africa | 0 | 1 | 1 | 1 | 1 | 1 | 0 | | | | | | | | |
| Canary Islands | Africa | 1 | 2 | 4 | 5 | 6 | 4 | 3 | | | | | | | | |
| Cayman Islands | North America | 1 | 2 | 2 | 1 | 1 | 1 | 1 | | | | | | | | |
| Central African Republic | Africa | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| Chad | Africa | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| Chile | South America | 6 | 4 | 2 | 4 | 1 | 1 | 4 | | | | | | | | |
| China | Asia | 183 | 211 | 368 | 597 | 961 | 1066 | 1037 | | | | | | | | |
| Christmas Island (Australia) | Oceania | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| Cocos (Keeling) Islands | Asia | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |

| Country | Distance to Capital (km) | Percent Split Between Travel Modes | | | | | | | | Percent Split Between Travel Modes | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Trips per year | Car | Rail | Bus | Ferry | Domestic Flight | Short-haul flight | Long-haul flight | Trips per year | Car | Rail | Bus | Ferry | Domestic Flight | Short-haul flight | Long-haul flight |
| Afghanistan | 6,366.90 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Aland islands | 2,211.04 | 2 | | | | | | 100.00% | | 2 | | | | | | 100.00% | |
| Albania | 2,509.90 | 2 | | | | | | 100.00% | | 2 | | | | | | 100.00% | |
| Algeria | 2,319.90 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| American Samoa | 16,432.56 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Andorra | 1,596.90 | 2 | | | | | | 100.00% | | 2 | | | | | | 100.00% | |
| Angola | 7,470.15 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Anguilla | 7,212.12 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Antigua and Barbuda | 7,223.08 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Argentina | 11,693.90 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Armenia | 4,240.90 | 2 | | | | | | 100.00% | | 2 | | | | | | 100.00% | |
| Aruba | 8,176.01 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Australia | 17,623.73 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Austria | 1,876.94 | 2 | | | | | | 100.00% | | 2 | | | | | | 100.00% | |
| Azerbaijan | 4,610.90 | 2 | | | | | | 100.00% | | 2 | | | | | | 100.00% | |
| Bahamas | 5,745.90 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Bahrain | 5,713.19 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Bangladesh | 8,646.24 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Barbados | 7,420.67 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Belarus | 2,513.51 | 2 | | | | | | 100.00% | | 2 | | | | | | 100.00% | |
| Belgium | 954.90 | 2 | | | | | | 100.00% | | 2 | | | | | | 100.00% | |
| Belize | 9,026.90 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Benin | 5,647.90 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Bermuda | 6,190.38 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Bhutan | 8,280.85 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Bolivia | 10,581.90 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Bosnia and Herzegovina | 2,262.38 | 2 | | | | | | 100.00% | | 2 | | | | | | 100.00% | |
| Botswana | 9,484.92 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Brazil | 9,327.90 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Virgin Islands (British) | 7,301.40 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Brunei | 11,906.44 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Bulgaria | 2,656.41 | 2 | | | | | | 100.00% | | 2 | | | | | | 100.00% | |
| Burkina Faso | 4,994.62 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Burundi | 7,352.18 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Cambodia | 10,653.20 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Cameroon | 6,048.42 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Canada | 6,042.90 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Cape Verde | 5,211.71 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Canary Islands | 3,533.48 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Cayman Islands | 8,384.64 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Central African Republic | 6,162.81 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Chad | 5,231.13 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Chile | 12,313.92 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| China | 8,866.90 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Christmas Island (Australia) | 15,850.64 | 2 | | | | | | | 100.00% | 2 | | | | | | | 100.00% |
| Cocos (Keeling) | | | | | | | | | | | | | | | | | |

Read Me First | Summaries | Tracked Data | Emissions Data | **Travel Data** | Domicile Data | Emission Factors

ABERDEEN 2040

Annual Emissions by Travel Method (tCO2e)

| Country | Region Classification | 2015-2016 | | | | | | | | 2016-2017 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Car | Rail | Bus | Ferry | Domestic Flight | Short-haul flight | Long-haul flight | Total | Car | Rail | Bus | Ferry | Domestic Flight | Short-haul flight | Long-haul flight | Total |
| Afghanistan | Asia | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Aland islands | Europe | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.73 | 0.00 | 0.73 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.70 | 0.00 | 0.70 |
| Albania | Europe | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.66 | 0.00 | 1.66 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.80 | 0.00 | 0.80 |
| Algeria | Africa | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.68 | 0.68 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.40 | 1.40 |
| American Samoa | Oceania | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Andorra | Europe | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Angola | Africa | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 46.05 | 46.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 67.76 | 67.76 |
| Anguilla | North America | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Antigua and Barbuda | North America | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.12 | 2.12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.18 | 2.18 |
| Argentina | South America | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6.87 | 6.87 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.54 | 3.54 |
| Armenia | Europe | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Aruba | North America | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Australia | Oceania | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 51.74 | 51.74 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 74.61 | 74.61 |
| Austria | Europe | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 40.28 | 0.00 | 40.28 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 41.04 | 0.00 | 41.04 |
| Azerbaijan | Europe | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 45.67 | 0.00 | 45.67 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 32.15 | 0.00 | 32.15 |
| Bahamas | North America | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Bahrain | Asia | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5.03 | 5.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 10.37 | 10.37 |
| Bangladesh | Asia | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 27.92 | 27.92 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 20.92 | 20.92 |
| Barbados | North America | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.18 | 2.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.49 | 4.49 |
| Belarus | Europe | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.15 | 0.00 | 4.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.80 | 0.00 | 0.80 |
| Belgium | Europe | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 19.55 | 0.00 | 19.55 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 20.27 | 0.00 | 20.27 |
| Belize | North America | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Benin | Africa | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Bermuda | North America | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.87 | 1.87 |
| Bhutan | Asia | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Bolivia | South America | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6.21 | 6.21 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 16.00 | 16.00 |
| Bosnia and Herzegovina | Europe | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Botswana | Africa | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.78 | 2.78 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5.74 | 5.74 |
| Brazil | South America | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 79.41 | 79.41 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 59.23 | 59.23 |
| Virgin Islands (British) | North America | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.14 | 2.14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.21 | 2.21 |
| Brunei | Asia | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 34.95 | 34.95 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 21.60 | 21.60 |
| Bulgaria | Europe | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 214.00 | 0.00 | 214.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 157.42 | 0.00 | 157.42 |
| Burkina Faso | Africa | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Burundi | Africa | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.22 | 2.22 |
| Cambodia | Asia | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Cameroon | Africa | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5.33 | 5.33 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 12.80 | 12.80 |
| Canada | North America | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 120.63 | 120.63 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 137.04 | 137.04 |
| Cape Verde | Africa | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.58 | 1.58 |
| Canary Islands | Africa | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.04 | 1.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.14 | 2.14 |

Read Me First | Summaries | Tracked Data | **Emissions Data** | Travel Data | Domicile Data | Emission Factors

Accessibility: Investigate

ABERDEEN 2040

| Emission source by region | Units | 2015 - 2016 | 2016 - 2017 | 2017 - 2018 | 2018 - 2019 | 2019 - 2020 | 2020 - 2021 | 2021 - 2022 |
|---|---|---|---|---|---|---|---|---|
| Africa | tonnes | 878.23 | 860.47 | 852.05 | 872.54 | 924.80 | 800.97 | 1,303.10 |
| Asia | tonnes | 2,688.98 | 2,801.52 | 3,414.36 | 3,736.35 | 4,590.33 | 4,851.62 | 6,262.50 |
| Europe | tonnes | 2,021.92 | 2,052.32 | 2,170.87 | 2,141.72 | 1,878.52 | 1,510.06 | 1,145.66 |
| Home | tonnes | 261.90 | 251.40 | 247.10 | 237.09 | 223.79 | 227.48 | 240.89 |
| North America | tonnes | 819.31 | 1,080.15 | 1,365.53 | 1,330.69 | 1,060.72 | 729.59 | 1,083.94 |
| Oceania | tonnes | 74.59 | 96.31 | 91.58 | 100.88 | 56.62 | 26.06 | 36.29 |
| South America | tonnes | 181.06 | 151.39 | 156.61 | 183.89 | 130.33 | 96.31 | 107.93 |
| UK | tonnes | 248.98 | 236.04 | 221.71 | 194.90 | 181.56 | 179.25 | 183.83 |
| Total | tonnes | 7,174.97 | 7,529.61 | 8,519.82 | 8,798.06 | 9,046.67 | 8,421.34 | 10,364.13 |

| Number of students | Units | 2015 - 2016 | 2016 - 2017 | 2017 - 2018 | 2018 - 2019 | 2019 - 2020 | 2020 - 2021 | 2021 - 2022 |
|---|---|---|---|---|---|---|---|---|
| Africa | # | 489 | 464 | 426 | 471 | 529 | 449 | 753 |
| Asia | # | 1,021 | 1,054 | 1,215 | 1,480 | 1,856 | 1,953 | 2,572 |
| Europe | # | 3,018 | 3,288 | 3,470 | 3,502 | 3,125 | 2,569 | 1,982 |
| Home | # | 7,384 | 7,292 | 7,305 | 7,222 | 7,141 | 7,307 | 7,768 |
| North America | # | 408 | 513 | 594 | 623 | 531 | 364 | 542 |
| Oceania | # | 14 | 18 | 16 | 19 | 11 | 5 | 7 |
| South America | # | 64 | 52 | 51 | 63 | 48 | 34 | 38 |
| UK | # | 1,730 | 1,689 | 1,613 | 1,461 | 1,428 | 1,418 | 1,458 |
| Total | # | 14,128 | 14,370 | 14,690 | 14,841 | 14,669 | 14,099 | 15,120 |

| Carbon emission per student | Units | 2015 - 2016 | 2016 - 2017 | 2017 - 2018 | 2018 - 2019 | 2019 - 2020 | 2020 - 2021 | 2021 - 2022 |
|---|---|---|---|---|---|---|---|---|
| Africa | tonnes | 1.80 | 1.85 | 2.00 | 1.85 | 1.75 | 1.78 | 1.73 |
| Asia | tonnes | 2.63 | 2.66 | 2.81 | 2.52 | 2.47 | 2.48 | 2.43 |
| Europe | tonnes | 0.67 | 0.62 | 0.63 | 0.61 | 0.60 | 0.59 | 0.58 |
| Home | tonnes | 0.04 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 |
| North America | tonnes | 2.01 | 2.11 | 2.30 | 2.14 | 2.00 | 2.00 | 2.00 |
| Oceania | tonnes | 5.33 | 5.35 | 5.72 | 5.31 | 5.15 | 5.21 | 5.18 |
| South America | tonnes | 2.83 | 2.91 | 3.07 | 2.92 | 2.72 | 2.83 | 2.84 |
| UK | tonnes | 0.14 | 0.14 | 0.14 | 0.13 | 0.13 | 0.13 | 0.13 |
| Total | tonnes | 15.44 | 15.68 | 16.70 | 15.52 | 14.84 | 15.06 | 14.93 |

| Emission source by travel modes | Units | 2015 - 2016 | 2016 - 2017 | 2017 - 2018 | 2018 - 2019 | 2019 - 2020 | 2020 - 2021 | 2021 - 2022 |
|---|---|---|---|---|---|---|---|---|
| Car | tonnes | 405.05 | 387.95 | 376.59 | 350.55 | 333.48 | 336.99 | 351.60 |

| Emission source by travel modes | Units | 2015 - 2016 | 2016 - 2017 | 2017 - 2018 | 2018 - 2019 | 2019 - 2020 | 2020 - 2021 | 2021 - 2022 |
|---|---|---|---|---|---|---|---|---|
| Car | tonnes | 405.05 | 387.95 | 376.59 | 350.55 | 333.48 | 336.99 | 351.60 |
| Rail | tonnes | 105.84 | 99.49 | 92.23 | 81.45 | 71.87 | 69.74 | 73.11 |
| Bus | tonnes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Ferry | tonnes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Domestic Flight | tonnes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Short-Haul Flight | tonnes | 2,021.92 | 2,052.32 | 2,170.87 | 2,141.72 | 1,878.52 | 1,510.06 | 1,145.66 |
| Long-Haul Flight | tonnes | 4,642.17 | 4,989.85 | 5,880.13 | 6,224.34 | 6,762.80 | 6,504.55 | 8,793.75 |
| Total | tonnes | 7,174.97 | 7,529.61 | 8,519.82 | 8,798.06 | 9,046.67 | 8,421.34 | 10,364.13 |

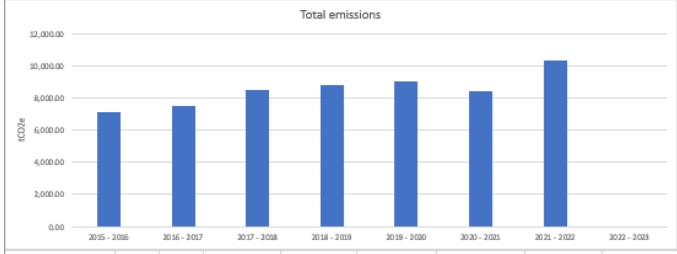
| Distance traveled by travel mode | Units | 2015 - 2016 | 2016 - 2017 | 2017 - 2018 | 2018 - 2019 | 2019 - 2020 | 2020 - 2021 | 2021 - 2022 |
|---|---|---|---|---|---|---|---|---|
| Car | km | 2,166,614.24 | 2,126,699.89 | 2,084,741.55 | 1,979,362.33 | 1,945,605.37 | 1,965,188.25 | 2,060,127.57 |
| Rail | km | 2,166,614.24 | 2,126,699.89 | 2,084,741.55 | 1,979,362.33 | 1,945,605.37 | 1,965,188.25 | 2,060,127.57 |
| Bus | km | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Ferry | km | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Domestic Flight | km | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Short-Haul Flight | km | 12,248,103.44 | 12,952,497.56 | 13,593,408.80 | 13,752,790.68 | 12,279,534.26 | 9,999,076.56 | 7,586,121.70 |
| Long-Haul Flight | km | 31,626,722.08 | 33,003,815.82 | 36,120,959.76 | 41,548,218.12 | 46,273,023.96 | 43,988,284.30 | 59,469,498.94 |
| Total | km | 48,208,054.00 | 50,209,713.16 | 53,883,851.66 | 59,259,733.46 | 62,443,768.96 | 57,917,737.36 | 71,175,875.78 |

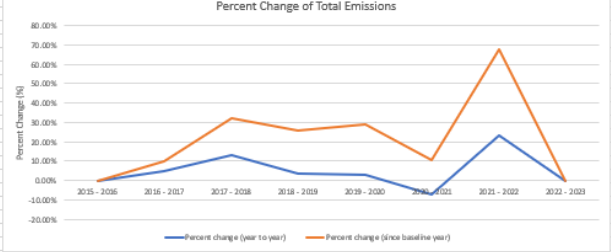
## Regional Breakdown

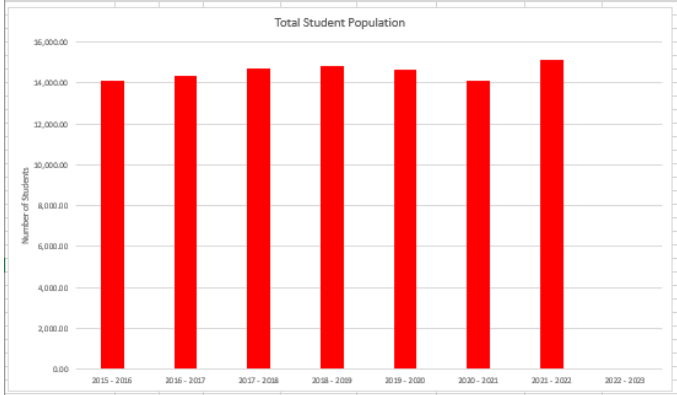
| Africa | 2015 - 2016 Emissions (tCO2e) | 2015 - 2016 Number of Students | 2016 - 2017 Emissions (tCO2e) | 2016 - 2017 Number of Students |
|---|---|---|---|---|
| Algeria | 0.681029844 | 1 | 1.402982724 | 2 |
| Angola | 46.05168191 | 21 | 67.76471871 | 30 |
| Benin | 0 | 0 | 0 | 0 |
| Botswana | 2.784393115 | 1 | 5.736100219 | 2 |
| Burkina Faso | 0 | 0 | 0 | 0 |
| Burundi | 0 | 0 | 2.223152188 | 1 |
| Cameroon | 5.326722526 | 3 | 12.80244868 | 7 |
| Cape Verde | 0 | 0 | 1.57591687 | 1 |
| Canary Islands | 1.037288389 | 1 | 2.136907365 | 2 |
| Central African Republic | 0 | 0 | 0 | 0 |
| Chad | 0 | 0 | 0 | 0 |
| Comoros | 0 | 0 | 0 | 0 |
| Congo | 0 | 0 | 0 | 0 |
| Congo (Democratic Republic of) | 0 | 0 | 0 | 0 |
| Djibouti | 0 | 0 | 0 | 0 |
| Egypt | 23.16260029 | 19 | 32.64850079 | 26 |
| Equatorial Guinea | 0 | 0 | 0 | 0 |
| Eritrea | 0 | 0 | 0 | 0 |
| Eswatini | 0 | 0 | 0 | 0 |
| Ethiopia | 5.758255726 | 3 | 5.931262319 | 3 |
| Gabon | 0 | 0 | 0 | 0 |
| Gambia | 3.011279768 | 2 | 3.101753564 | 2 |
| Ghana | 65.87548048 | 39 | 73.07429984 | 42 |
| Guinea | 0 | 0 | 0 | 0 |
| Guinea-Bissau | 0 | 0 | 0 | 0 |
| Ivory Coast | 1.653667514 | 1 | 0 | 0 |
| Kenya | 52.56630966 | 24 | 45.1213855 | 20 |

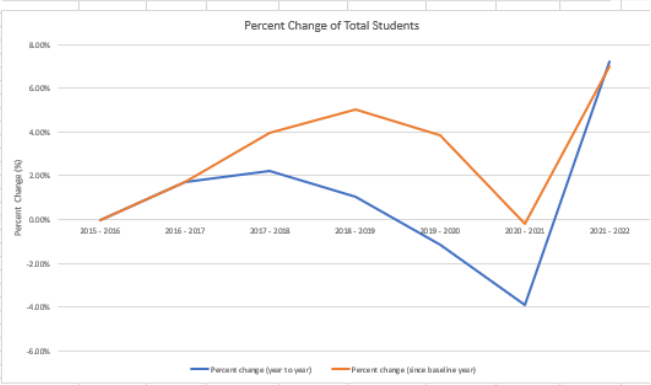
Read Me First | Summaries | **Tracked Data** | Emissions Data | Travel Data | Domicile Data | Emission Factors | ⊕

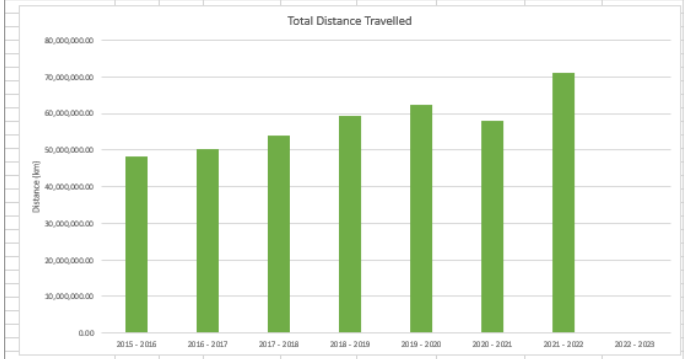
| | Units | Scope | 2015 - 2016 | 2016 - 2017 | 2017 - 2018 | 2018 - 2019 | 2019 - 2020 | 2020 - 2021 | 2021 - 2022 |
|---|---|---|---|---|---|---|---|---|---|
| **Total emissions** | tCO2e | Scope 3 | 7,174.97 | 7,529.61 | 8,519.82 | 8,798.06 | 9,046.67 | 8,421.34 | 10,364.13 |
| Percent change (year to year) | | | - | 4.94% | 13.15% | 3.27% | 2.83% | -6.91% | 23.07% |
| Percent change (since baseline year) | | | - | 4.94% | 18.74% | 22.62% | 26.09% | 17.37% | 44.45% |
| **Total Students** | # | Scope 3 | 14,128.00 | 14,370.00 | 14,690.00 | 14,841.00 | 14,669.00 | 14,099.00 | 15,120.00 |
| Percent change (year to year) | | | - | 1.71% | 2.23% | 1.03% | -1.16% | -3.89% | 7.24% |
| Percent change (since baseline year) | | | - | 1.71% | 3.98% | 5.05% | 3.83% | -0.21% | 7.02% |
| **Total distance travelled** | km | Scope 3 | 48,208,054.00 | 50,209,713.16 | 53,883,851.66 | 59,259,733.46 | 62,443,768.96 | 57,917,737.36 | 71,175,875.78 |
| Percent change (year to year) | | | - | 4.15% | 7.32% | 9.98% | 5.37% | -7.25% | 22.89% |
| Percent change (since baseline year) | | | - | 4.15% | 11.77% | 22.92% | 29.53% | 20.14% | 47.64% |

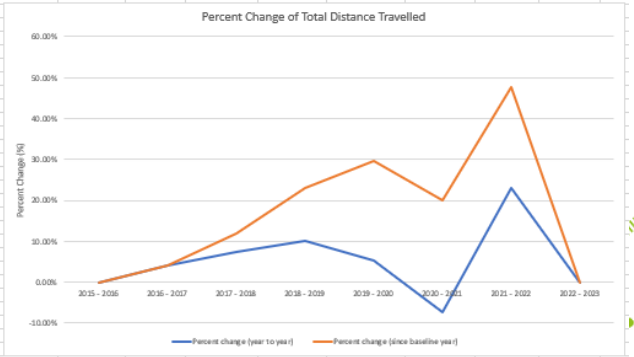
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# Questions?

| Regions | Starting Location | Travel mode | Number of Return Trips | Journey |
|---|---|---|---|---|
| Africa | Country Capital | Economy passenger, Long-haul flight | 1 | London then to Aberdeen |
| Asia | | | | |
| North America | | | | |
| South America | | | | |
| Oceania | | | | |
| Europe | | Economy passenger, Short-haul flights | | |
| Home/UK | | 50/50 split, national rail and average car | | Direct to Aberdeen |