Domestic and International Student Relocation Travel Emissions Calculator Tool – Simple

User Guide

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Version History

Version	Date	Authors	Reviewers	Notes
Draft 1	09/03/2023	Estrid Jonsson – University of Aberdeen Net Zero Research – Travel Emissions Intern	Roederer Rose Lyne – University of Aberdeen Net Zero & Emissions Manager	Draft developed for the original tool
Version 1	27/09/2023	Roederer Rose Lyne – University of Aberdeen Net Zero & Emissions Manager	Matt Woodthorpe – EAUC Scotland Programme Manager	Guidance for new tool
Version 2	31/08/2024	Roederer Rose Lyne – University of Aberdeen Net Zero & Emissions Manager	Matt Woodthorpe – EAUC Scotland Programme Manager	Updated guidance to reflect changes to tool

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Abbreviations and Acronyms

Abbreviation/Acronym	Description
GDPR	General Data Protection Regulation
GHG	Green House Gases
N America	North America
PBCCD	Scotland's Public Bodies Climate Change Duties
S America	South America
SCEF	Standardised Carbon Emissions Reporting Framework
tCO_2e	Tonnes (t) of carbon dioxide (CO_2) equivalent (e)
UK	United Kingdom
WTT	Well-To-Tank

Introduction

This is a user guide to the "**Domestic and International Student Relocation Travel Emissions Calculator Tool - Simple**", developed by the University of Aberdeen and EAUC Scotland.

The tool uses student domicile data and university specific travel assumptions to calculate the distance travelled from the capital of each country to the institution and the associated emissions.

The tool aligns with the Standardised Carbon Emissions Reporting Framework (SCEF) guidance for the Scope 3 "UK Student Travel & International Student Travel" category and Scotland's Public Bodies Climate Change Duties (PBCCD) reporting requirements.

Please note, that this tool does not include Well-To-Tank (WTT) emissions from student travel. The outputs of the tool will allow these emissions to be calculated separately.

The tool does not require any identifiable student data (e.g., student IDs, names, etc.) to function. As such, there are no GDPR concerns.

For information on how the tool was developed, please refer to the research paper behind the finalised methodology, found in the following location:

www.sustainabilityexchange.ac.uk/public_bodies_climate_change_duties_reporting_t

An advanced version of the tool is also available which provides greater flexibility regarding UK layover locations for international students.

Note from the Developers

Rose Lyne – Net Zero & Emissions Manager – University of Aberdeen

This tool is based upon the "Student Travel to Study Emissions Calculation Tool", developed by Estrid Jonsson, a University of Aberdeen Net Zero Research – Travel Emissions Intern within the Estates & Facilities Sustainability Team, as her internship project.

The internship was established to fill a gap identified in the University's emissions profile, as at the time, there was no formal methodology available within the sector to calculate these emissions.

In taking this remit forward, she researched the data and reporting standards required for the higher education sector's emissions reporting, engaged with the sector to understand how other institutions were capturing and reporting these emissions, and finally developed a robust methodology and tool that enabled the University to calculate these emissions for the first time, enhancing our emissions reporting and contributing to our sustainability commitments articulated as part of our Aberdeen 2040 strategy.

Following engagement with the Higher Education Sector and EAUC Scotland, I have evolved the original tool to become the "Domestic and International Student Relocation Travel Emissions Calculator Tool". Providing increased granularity, flexibility, and customisation as to align with reporting requirements, best practice, and to allow use by any institution.

At the University of Aberdeen, we include the calculated emissions data in our annual PBCCD submission and in our public Sustainability Dashboard.

Matt Woodthorpe – Scotland Programme Manager – EAUC

EAUC are pleased to publish this tool for the UK Further and Higher Education sector in partnership with the University of Aberdeen. Domestic and international student relocation travel emissions form a significant proportion of institutional emissions: for example, within 2020/21 PBCCD reporting, these emissions accounted for 22% of total reported emissions for one of the few institutions currently reporting their student relocation emissions.

Yet, domestic and international student relocation travel emissions are often not reported by the sector; this is largely due to the internal capacity needed to create an internal methodology for calculation. The tool presented here helps address this critical capacity challenge. The tool also helps institutions fulfil the principles of emissions reporting under the Greenhouse Gas (GHG) Protocol, aligns with the sector's Standardised Carbon Emissions Framework, and, for Scottish institutions, will help the sector meet the expectations set out in the latest public sector bodies guidance from Scottish Government.

EAUC hopes that the creation of a user-friendly tool will enable the reporting of student relocation emissions to become the norm across the sector. We encourage all institutions to calculate and report on these emissions, noting that they highlight one of the principal areas in which student recruitment, internationalisation, and sustainability strategies intersect.

Flight Calculation Methodologies

A selection of calculation methodologies is available for domestic and international flights, enabling users to develop travel assumptions that reflect the transport infrastructure around their institution.

Domestic Flights

The calculation methodology for domestic flights taken by UK/Home students has been expanded to enable customisation of the land-based travel method from the nearest airport to the institution:

- Domestic Methodology A - Unknown Final Land Travel Method
- Domestic Methodology B - Known Final Land Travel Method

Methodology A

This methodology assumes that a UK/Home student will fly from their domicile capital to the nearest airport to the institution and the final leg of the journey is undertaken via an unknown land-based method. As the travel method for the final leg is unknown, it is assumed to be a 50/50 split between car and rail.

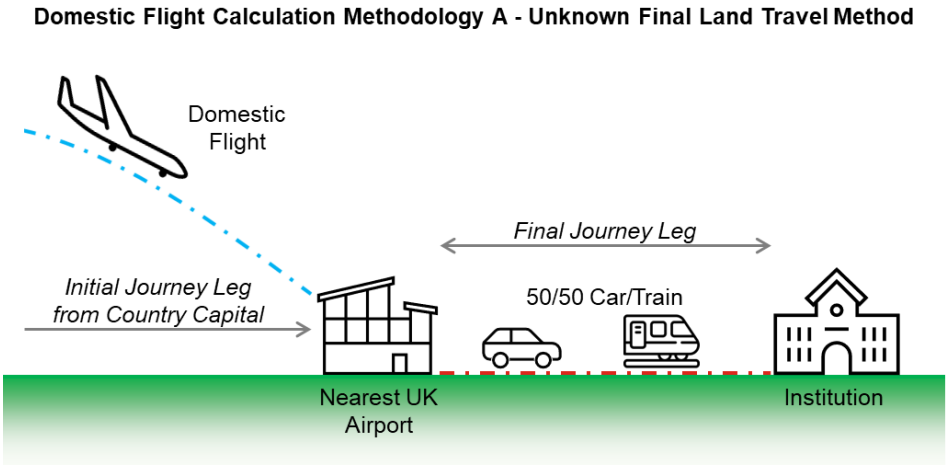


Figure 1: Domestic Flight Calculation Methodology - A

Methodology B

If an institution knows the travel methods its student's take for the final leg of the journey, or if the 50/50 split between car and rail used in Methodology A is not reflective of the travel infrastructure to the institution, then Methodology B can be used.

As with Methodology A, it is assumed that a student will fly to the nearest airport from the country capital and then travel the final leg to the institution via a land-based method. Methodology B allows for the user to enter a percentage split between the following land-based travel methods:

- Car
- Rail
- Coach
- Local Bus
- taxi

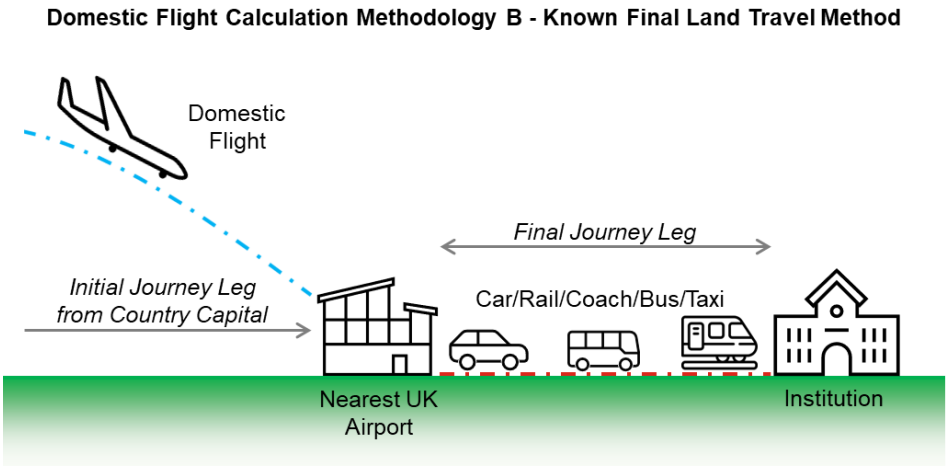


Figure 2: Domestic Flight Calculation Methodology - B

International Flights

To fully reflect the variety of ways international students reach their institutions, four calculation methodologies have been developed for international flights to account for travel from landing location to an institution:

- International Methodology A - One Airport Location and Unknown Final Land Travel Method
- International Methodology B - One Airport Location and Known Final Land Travel Method
- International Methodology C - Layover and Regional Airports and Unknown Final Travel Method
- International Methodology D - Layover and Regional Airports and Known Final Travel Method

Methodology A

It is assumed that a student will fly into an UK airport from the country capital and then travel the final leg to the institution via an unknown land-based method. As the travel method for the final leg is unknown, it is assumed to be a 50/50 split between car and rail.

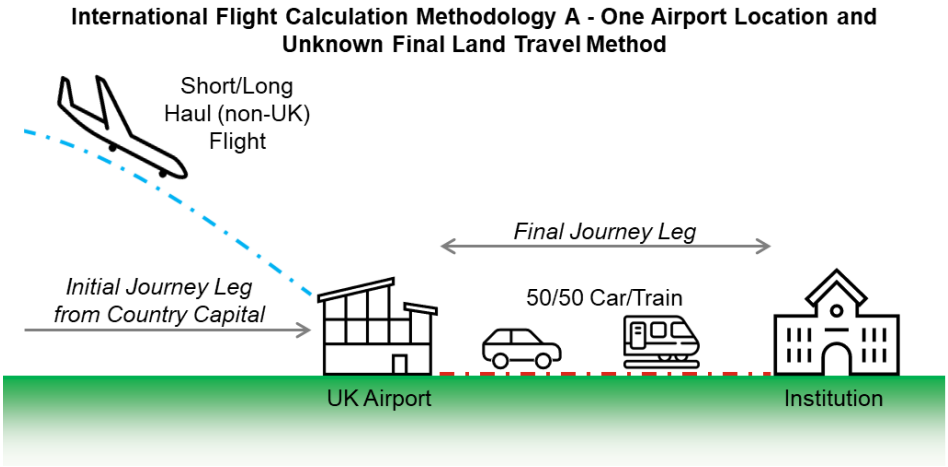


Figure 3: International Flight Calculation Methodology - A

Methodology B

If an institution knows the travel methods its student's take for the final leg of the journey, or if the 50/50 split between car and rail used in Methodology A is not reflective of the travel infrastructure to the institution, then Methodology B can be used.

As with Methodology A, it is assumed that a student will fly into an UK airport from the country capital and then travel the final leg to the institution via a land-based method. Methodology B allows for the user to enter a percentage split between the following land-based travel methods:

- Car
- Rail
- Coach
- Local Bus
- Taxi

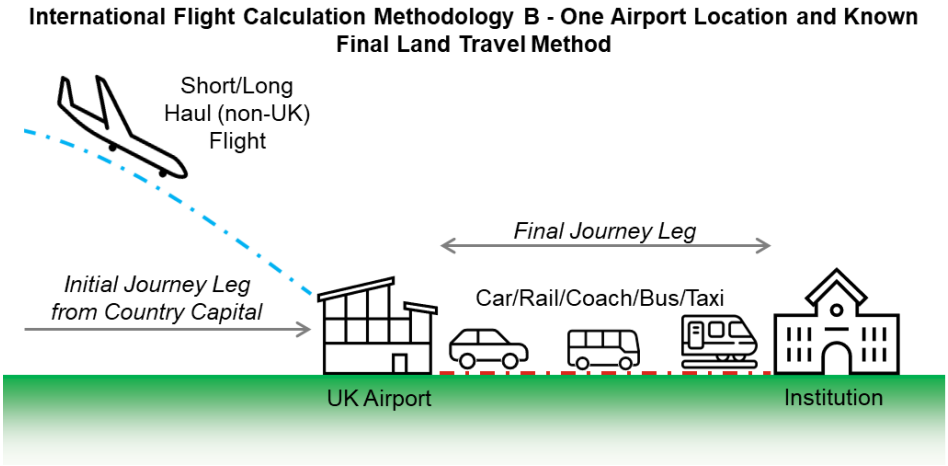


Figure 4: International Flight Calculation Methodology - B

Methodology C

If an institution reviews the air travel options for its students and finds that the majority of international flights are directed through a central layover airport (e.g., London Heathrow) before flying to a more local regional airport, then Methodologies A and B will not be suitable.

Methodology C is similar to Methodology A, where the land-based travel method for the final leg of a student's journey from the airport is unknown, however, it also incorporates the inclusion of a middle leg of the journey from a central airport to a regional one. As the travel method for the final leg is unknown, it is assumed to be a 50/50 split between car and rail.

The tool calculates the flight emissions resulting from the middle leg of the journey using the UK "domestic flights" emission factor.

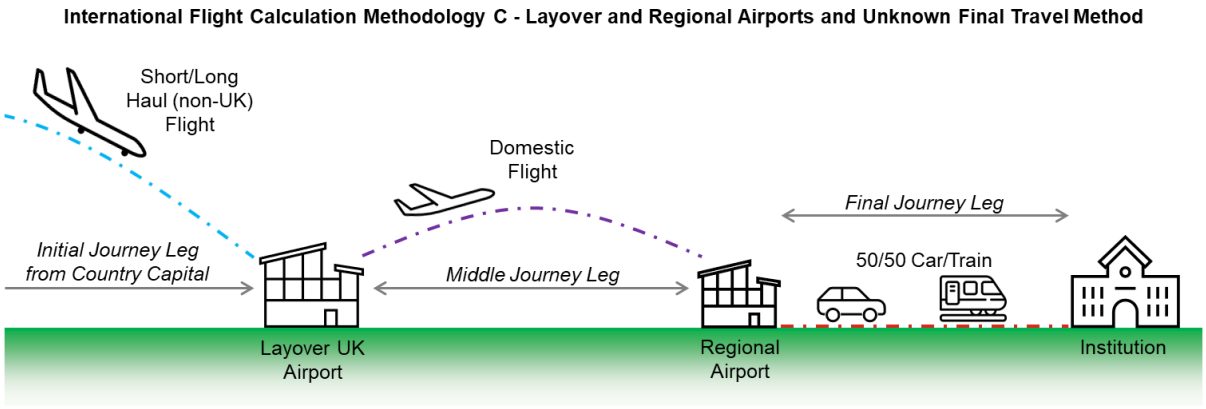


Figure 5: International Flight Calculation Methodology - C

Methodology D

If an institution expects students to travel via regional airport and knows the travel methods its student's take for the final leg of the journey, or if the 50/50 split between car and rail used in Methodology C is not reflective of the travel infrastructure to the institution, then Methodology D can be used.

As with Methodology C, it is assumed that a student will fly into a regional airport and then travel the final leg to the institution via a land-based method. Methodology D allows for the user to enter a percentage split between the following land-based travel methods:

- Car
- Rail
- Coach
- Bus
- Taxi

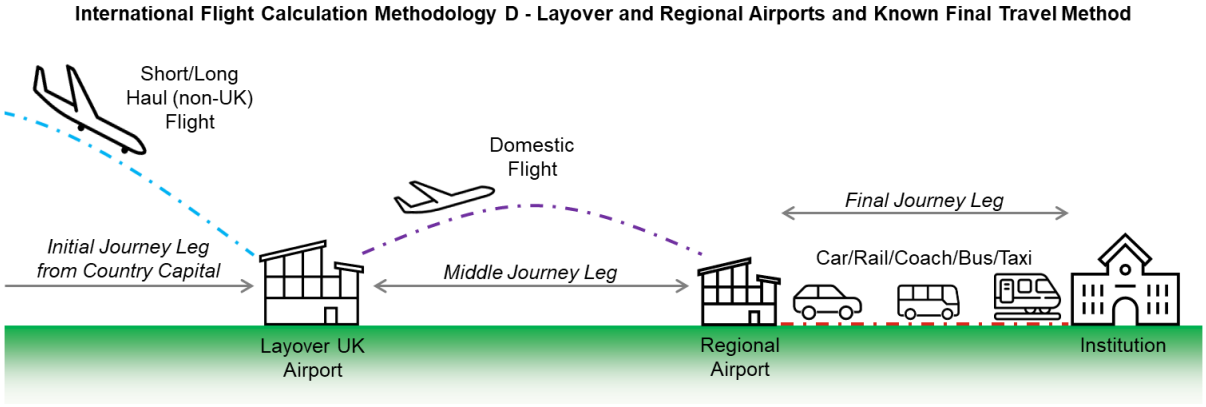


Figure 6: International Flight Calculation Methodology - D

Recommendations

There are a number of recommendations for institutions when using the tool:

- Assume only 1 return journey (i.e., 2 trips a year) unless an institution's residential halls close over holiday periods (e.g., Christmas).

- Institutions should undertake regular (i.e., once every year or two) surveys of their student populations to ensure travel assumptions are reflective. Appendix A includes a copy of the questions included in the University of Aberdeen's survey.

Using the Tool

The tool collates the entered student domicile data, travel assumptions, and distance data to calculate emissions data for each country.

The workbook contains the following 6 worksheets:

Worksheet	Description
Cover Page	A worksheet which provides a brief overview of the tool and guides for sources of data, and shows the following: • Person who completed the workbook • Reporting year • Institution name • Home Country
Country and Student Data	A worksheet showing the following: • Distance to institution from country capital for UK countries • Distance to layover location from international country capitals • Total number of students from each country • Region classification for each country
Flight Methodologies	A worksheet showing the following: • International Flight Methodology • Domestic Flight Methodology • Regional airports • Distance from layover location to regional airports
Emission Factors	A worksheet showing the following: • Reporting year emission factors • Historic emission factors
Calculation of Emissions	A worksheet showing the following: • Number of trips for each country • Travel assumptions for each country • Total emissions for each travel method for each country
Summary and Analysis	A worksheet showing the following: • Overall summaries • Travel summaries • Region summaries

Only complete areas which are highlighted **green**.

Step 1: Request and Organise Domicile Data

Request annual domicile student data from the relevant department in the institution for campus and blended registered students. Organise the data in a separate workbook so that you have a list of each country and the total number of students for each.

Step 2: Enter Institution Information

Complete the following sections in the "Cover Page" worksheet:

Institution Data

Institution Name:	University of Aberdeen
Home Country:	Scotland
User:	Rose Lyne
Reporting Year:	2022 - 2023
Date:	

Step 3: Enter Domicile Data

In the "Country and Student Data" worksheet, enter the associated student totals compiled in Step 1 against each of the countries listed.

Local Town/City/Region	Region	Number of students	Distance to Institution from local Town/City/Region (km)
Aberdeen City	Home	3000	8.00

UK Country	Region	Number of students	Distance to Institution from country capital (km)
England	UK	1325	648.11
Guernsey	UK	5	862.76
Isle of Man	UK	5	887.30
Jersey	UK	5	366.48

Country	Region	Number of students	Distance to layover location from country capital (km)
Afghanistan	Asia	3	5,691.47
Aland islands	Europe	0	1,579.56
Albania	Europe	0	1,854.26
Algeria	Africa	4	1,614.85
American Samoa	Oceania	0	15,834.00

If you don't have data on the number of local students to your institution, then this can be left blank.

Any new countries can be inserted at the bottom of the international table along with their region, distance, and student number data.

Step 4: Enter Country Capital Distances and Regions

Step 4.a Local Students

For local students, enter the furthest distance a student could reside to be considered "local", i.e., city limits, council boundary, etc.

Local Town/City/Region	Region	Number of students	Distance to Institution from local Town/City/Region (km)
Aberdeen City	Home	3000	8.00

Step 4.b UK Countries

Enter the distance from the UK country capitals to the institution in the "Country and Student Data" worksheet using the following website: https://www.distance.to.

UK Country	Region	Number of students	Distance to Institution from country capital (km)
England	UK	1325	648.11
Guernsey	UK	5	862.76
Isle of Man	UK	5	887.30
Jersey	UK	5	366.48

Step 4.c International Countries

For international countries, there is no need to enter distance data from each country capital to the layover location.

This is because the tool contains the longitude and latitude data for each country capital and utilises the Haversine Formula to calculate the distance between the two locations[1]. Ensure Step 5 has been completed for the distances to be populated.

A region for each country has also been pre-populated but this can be changed by selecting select a region classification from the drop-down list.

Country	Region	Number of students	Distance to layover location from country capital (km)
Afghanistan	Asia	3	5,691.47
Aland islands	Europe	0	1,579.56
Albania	Europe	0	1,854.26
Algeria	Africa	4	1,614.85
American Samoa	Oceania	0	15,834.00

Any new countries can be inserted at the bottom of the international table along with their region, distance, and student number data.

[1] More details can be found here: https://theexceltrainer.co.uk/calculate-distance-and-plot-on-a-map/

Step 5: Select International Layover Location

This tool contains the longitude and latitude coordinates of each regional airport in the UK, in addition to the coordinates for each capital city.

As a result, the user must select a UK layover location, in the "Flight Methodologies" worksheet, for international students to enable the distances to be calculated.

Layover Location: London Gatwick

Regional Airport	Distance from Layover Location to Regional Airport (km)
Aberdeen Airport	685.35
Birmingham International Airport	180.25
Bristol Airport	178.33
East Midlands Airport	202.28
Edinburgh Airport	573.30
Exeter Airport	231.15
Glasgow Airport	594.81
Leeds Bradford Airport	317.76
Liverpool Airport	302.85
Manchester Airport	283.08
Newcastle Airport	443.67
London Heathrow	39.77
London Gatwick	0.00
London City	40.07
Add additional locations	*Add additional locations*
Add additional locations	*Add additional locations*
Add additional locations	*Add additional locations*

Additional layover locations can be added at the bottom of the page, with distances sourced from the following website: https://www.distance.to/

Step 6: Select International Flight Calculation Methodology

The flight calculation methodologies for international flights should now be selected in the "Flight Methodologies" worksheet and the relevant data inserted.

International Flight Calculation Methodology Type:	D

Step 6.a: International Flight Methodology A

Enter the driving distance in kilometres from the landing location to the institution which can be sourced from the following website: https://www.distance.to/

International Flight Calculation Methodology A - One Airport Location and Unknown Final Land Travel Method

Flight Landing Location:	London Gatwick
Distance from Landing Location to University (km):	863.5
Travel Method From Landing Location to University - 50% Split 1:	Car
Travel Method From Landing Location to University - 50% Split 2:	Rail

Step 6.b: International Flight Methodology B

Enter the driving distance in kilometres from the landing location to the institution which can be sourced from the following website: https://www.distance.to/ .

International Flight Calculation Methodology B - One Airport Location and Known Final Land Travel Method

Flight Landing Location:	London Gatwick
Distance from Landing Location to University (km):	863.5
Travel Method From Landing Location to University - % Split Car:	30%
Travel Method From Landing Location to University - % Split Rail:	20%
Travel Method From Landing Location to University - % Split Coach:	10%
Travel Method From Landing Location to University - % Split Local Bus:	30%
Travel Method From Landing Location to University - % Split Taxi:	10%

Enter a percentage split value for each travel method.

International Flight Calculation Methodology B - One Airport Location and Known Final Land Travel Method

Flight Landing Location:	London Gatwick
Distance from Landing Location to University (km):	863.5
Travel Method From Landing Location to University - % Split Car:	30%
Travel Method From Landing Location to University - % Split Rail:	20%
Travel Method From Landing Location to University - % Split Coach:	10%
Travel Method From Landing Location to University - % Split Local Bus:	30%
Travel Method From Landing Location to University - % Split Taxi:	10%

Step 6.c: International Flight Methodology C

Select regional airport location from the drop-down list.

International Flight Calculation Methodology C - Layover and Regional Airports and Unknown Final Travel Method

Initial Flight Landing Location:	London Gatwick
Nearest Regional Airport to Institution:	Aberdeen Airport
Distance From Layover to Regional Airport (km):	685.3493017
Distance From Regional Airport to University (km):	8.1
Travel Method From Regional Airport to University - 50% Split 1:	Car
Travel Method From Regional Airport to University - 50% Split 2:	Rail

Enter the driving distance in kilometres from the regional airport to the institution which can be sourced from Google Maps.

International Flight Calculation Methodology C - Layover and Regional Airports and Unknown Final Travel Method

Initial Flight Landing Location:	London Gatwick
Nearest Regional Airport to Institution:	Aberdeen Airport
Distance From Layover to Regional Airport (km):	685.3493017
Distance From Regional Airport to University (km):	8.1
Travel Method From Regional Airport to University - 50% Split 1:	Car
Travel Method From Regional Airport to University - 50% Split 2:	Rail

Step 6.d: International Flight Methodology D

Select regional airport location from the drop-down list.

International Flight Calculation Methodology D - Layover and Regional Airports and Known Final Travel Method

Initial Flight Layover Location:	London Gatwick
Nearest Regional Airport to Institution:	Aberdeen Airport
Distance From Layover to Regional Airport (km):	685.35
Distance From Regional Airport to University (km):	8.1
Travel Method From Regional Airport to University - % Split Car:	
Travel Method From Regional Airport to University - % Split Rail:	
Travel Method From Regional Airport to University - % Split Coach:	33%
Travel Method From Regional Airport to University - % Split Local Bus:	33%
Travel Method From Regional Airport to University - % Split Taxi:	33%

Enter the driving distance in kilometres from the regional airport to the institution which can be sourced from Google Maps.

International Flight Calculation Methodology D - Layover and Regional Airports and Known Final Travel Method

Initial Flight Layover Location:	London Gatwick
Nearest Regional Airport to Institution:	Aberdeen Airport
Distance From Layover to Regional Airport (km):	685.35
Distance From Regional Airport to University (km):	8.1
Travel Method From Regional Airport to University - % Split Car:	
Travel Method From Regional Airport to University - % Split Rail:	
Travel Method From Regional Airport to University - % Split Coach:	33%
Travel Method From Regional Airport to University - % Split Local Bus:	33%
Travel Method From Regional Airport to University - % Split Taxi:	33%

Enter a percentage split value for each travel method.

International Flight Calculation Methodology D - Layover and Regional Airports and Known Final Travel Method

Initial Flight Layover Location:	London Gatwick
Nearest Regional Airport to Institution:	Aberdeen Airport
Distance From Layover to Regional Airport (km):	685.35
Distance From Regional Airport to University (km):	8.1
Travel Method From Regional Airport to University - % Split Car:	
Travel Method From Regional Airport to University - % Split Rail:	
Travel Method From Regional Airport to University - % Split Coach:	33%
Travel Method From Regional Airport to University - % Split Local Bus:	33%
Travel Method From Regional Airport to University - % Split Taxi:	33%

Step 7: Select Domestic Flight Calculation Methodology

The flight calculation methodologies for domestic flights should now be selected in the "Flight Methodologies" worksheet and the relevant data inserted.

Domestic Flight Calculation Methodology Type:	B

Step 7.a: Domestic Flight Methodology A

Select airport location from the drop-down list.

Domestic Flight Calculation Methodology A - Unknown Final Land Travel Method

Nearest Airport to Institution:	Aberdeen Airport
Distance from Airport to University (km):	8.1
Travel Method From Airport to University - 50% Split 1:	Car
Travel Method From Airport to University - 50% Split 2:	Rail

Enter the driving distance in kilometres from the landing location to the institution which can be sourced from Google Maps.

Domestic Flight Calculation Methodology A - Unknown Final Land Travel Method

Nearest Airport to Institution:	Aberdeen Airport
Distance from Airport to University (km):	8.1
Travel Method From Airport to University - 50% Split 1:	Car
Travel Method From Airport to University - 50% Split 2:	Rail

Step 7.b: Domestic Flight Methodology B

Select airport location from the drop-down list.

Domestic Flight Calculation Methodology B - Known Final Land Travel Method

Nearest Airport to Institution:	Aberdeen Airport
Distance from Airport to University (km):	8.1
Travel Method From Airport to University - % Split Car:	
Travel Method From Airport to University - % Split Rail:	
Travel Method From Airport to University - % Split Coach:	33%
Travel Method From Airport to University - % Split Local Bus:	33%
Travel Method From Airport to University - % Split Taxi:	33%

Enter the driving distance in kilometres from the landing location to the institution which can be sourced from Google Maps.

Domestic Flight Calculation Methodology B - Known Final Land Travel Method

Nearest Airport to Institution:	Aberdeen Airport
Distance from Airport to University (km):	8.1
Travel Method From Airport to University - % Split Car:	
Travel Method From Airport to University - % Split Rail:	
Travel Method From Airport to University - % Split Coach:	33%
Travel Method From Airport to University - % Split Local Bus:	33%
Travel Method From Airport to University - % Split Taxi:	33%

Enter a percentage split value for each travel method.

Domestic Flight Calculation Methodology B - Known Final Land Travel Method

Nearest Airport to Institution:	Aberdeen Airport
Distance from Airport to University (km):	8.1
Travel Method From Airport to University - % Split Car:	
Travel Method From Airport to University - % Split Rail:	
Travel Method From Airport to University - % Split Coach:	33%
Travel Method From Airport to University - % Split Local Bus:	33%
Travel Method From Airport to University - % Split Taxi:	33%

Step 8: Enter Emissions Factors

For each travel method, source and enter the relevant emission factors from the annual UK Government developed dataset into the "Emission Factors" worksheet: https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting

Activity	Type	Unit	kg CO_2e	Notes
Car	Average car	km	0.16984	Unknown fuel
Rail	National rail	passenger.km	0.03546	
Bus	Coach	passenger.km	0.02717	
Bus	Average local bus	passenger.km	0.10846	
Taxi	Regular Taxi	passenger.km	0.14861	
Ferry	Average (all passenger)	passenger.km	0.1127	
Flights	Domestic, to/from UK	passenger.km	0.27257	With RF - Average passenger
Flights	Short-haul, to/from UK	passenger.km	0.18287	With RF - Economy class
Flights	Long-haul, to/from UK	passenger.km	0.20011	With RF - Economy class

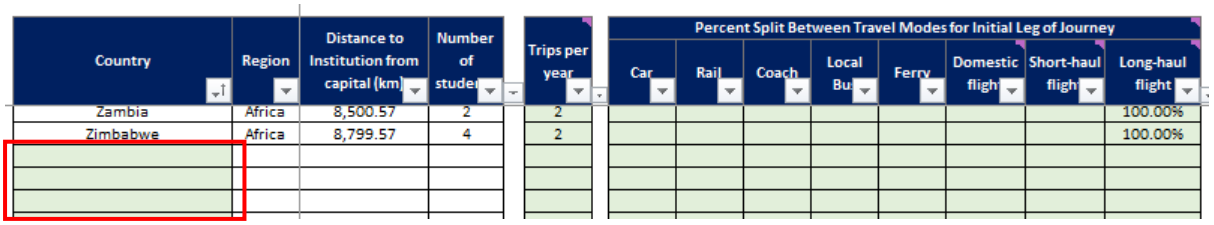
Please note that if, for example, calculations for the academic year 2015/2016 are made, emission factors for 2016 should be used, as a majority of the academic year falls within this year.

Historic data can also be entered in this worksheet.

Activity	Type	Unit	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019
Car	Average car	km	0.186950	0.18242	0.18064	0.1771
Rail	National rail	passenger.km	0.048850	0.04678	0.04424	0.04115
Bus	Coach	passenger.km	0.028670	0.0278	0.02801	0.02779
Bus	Average local bus	passenger.km	0.119860	0.12259	0.12007	0.12076
Taxi	Regular Taxi	passenger.km	0.162860	0.15617	0.15344	0.15018
Ferry	Average (all passenger)	passenger.km	0.116063	0.116112	0.112873	0.112863
Flights	Domestic, to/from UK	passenger.km	0.278670	0.26744	0.29832	0.25493
Flights	Short-haul, to/from UK	passenger.km	0.165080	0.15845	0.1597	0.15573
Flights	Long-haul, to/from UK	passenger.km	0.146780	0.15119	0.16279	0.14981

Step 9: Enter Travel Assumptions

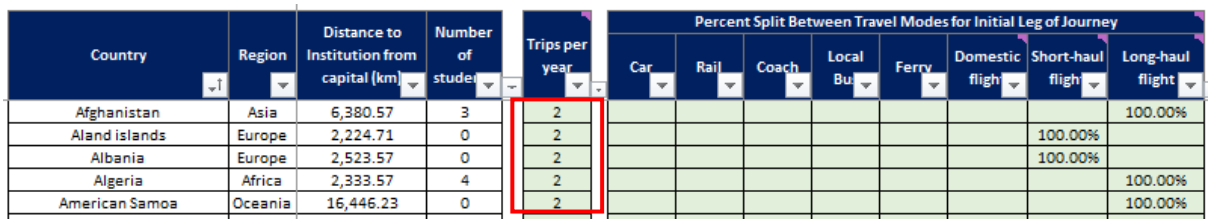
The list of default countries in "Country and Student Data" is already pre-populated but any new countries can be inserted at the bottom of the table in the "Calculation of Emissions" worksheet. The "Country" column can be sorted alphabetically once all countries have been entered.



Country	Region	Distance to Institution from capital (km)	Number of studen	Trips per year	Percent Split Between Travel Modes for Initial Leg of Journey							
					Car	Rail	Coach	Local Bu	Ferry	Domestic fligh	Short-haul fligh	Long-haul flight
Zambia	Africa	8,500.57	2	2								100.00%
Zimbabwe	Africa	8,799.57	4	2								100.00%

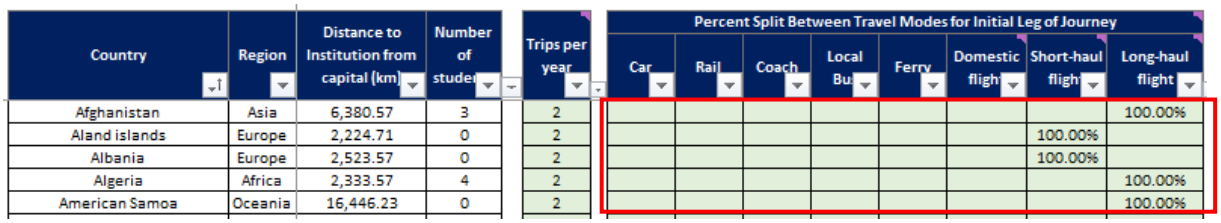
Enter the assumed number of trips per year taken by each student. For 1 return trip (i.e., journey to an institution at the start of term and the return journey home at the end of term) enter the value "2".

It is recommended that a user assumes only 1 return journey (i.e., 2 trips a year) unless their institution's residential halls close over holiday periods (e.g., Christmas).



Country	Region	Distance to Institution from capital (km)	Number of studen	Trips per year	Percent Split Between Travel Modes for Initial Leg of Journey							
					Car	Rail	Coach	Local Bu	Ferry	Domestic fligh	Short-haul fligh	Long-haul flight
Afghanistan	Asia	6,380.57	3	2								100.00%
Aland islands	Europe	2,224.71	0	2							100.00%	
Albania	Europe	2,523.57	0	2							100.00%	
Algeria	Africa	2,333.57	4	2								100.00%
American Samoa	Oceania	16,446.23	0	2								100.00%

For each country, enter the **initial journey leg** travel mode assumption splits (i.e., when entering % assumptions for flights, **do not also add % assumptions for car/rail/etc. for the final leg of the journey to the institution**). The tool will automatically calculate the emissions from any middle and end journey legs as detailed in the "Flights Methodology" worksheet.

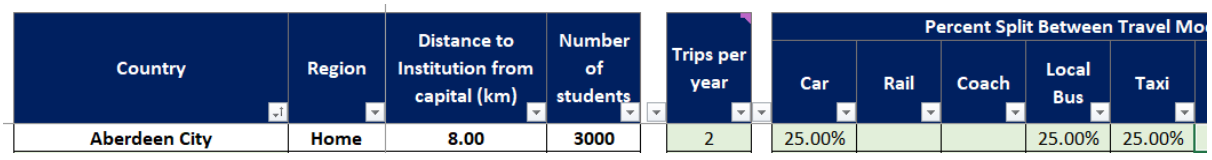


Country	Region	Distance to Institution from capital (km)	Number of studen	Trips per year	Percent Split Between Travel Modes for Initial Leg of Journey							
					Car	Rail	Coach	Local Bu	Ferry	Domestic fligh	Short-haul flight	Long-haul flight
Afghanistan	Asia	6,380.57	3	2								100.00%
Aland islands	Europe	2,224.71	0	2							100.00%	
Albania	Europe	2,523.57	0	2							100.00%	
Algeria	Africa	2,333.57	4	2								100.00%
American Samoa	Oceania	16,446.23	0	2								100.00%

For simplicity the same travel mode can be assumed for each country in a region. Regular travel surveys can allow these assumptions to become more granular.

If you have data for "local" students, please ensure you factor in the proportion of students walking. A worked example is shown below:

Results taken from a travel survey shows that 25% of "local" students walked, 25% took the local bus, 25% drove, and 25% took a taxi at the start and end of the academic year. To take account of this travel, the following assumptions were entered into the relocation tool:



Country	Region	Distance to Institution from capital (km)	Number of students	Trips per year	Percent Split Between Travel Mo				
					Car	Rail	Coach	Local Bus	Taxi
Aberdeen City	**Home**	**8.00**	**3000**	2	25.00%			25.00%	25.00%

Step 10: Update Country List

If any new countries have been added to the tool in previous worksheets, add it to the relevant region table in the "Summary and Analysis" worksheet.

Zimbabwe	14.46	0.76%	0.10%	4.00	0.51%	0.03%
	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	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%	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%
	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	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%	0.00%	0.00	0.00%	0.00%
TOTAL	**1,900.58**			**781.00**		

Tool Outputs

The "Summary and Analysis" worksheet collates the total emissions and distances travelled for each travel mode and provides a variety of summaries, analysis and graphs:

- Total emissions and students by region and their associated proportion of the institution's total student relocation emissions.
- Total emissions and distance travelled for each travel mode and for each region, and their associated proportion.
- Region breakdown showing total emissions for each country and proportional analysis.

For the completion of an institution's annual PBCCD submission, the "PBCCD Data Table" provides the total distance data for each travel mode.

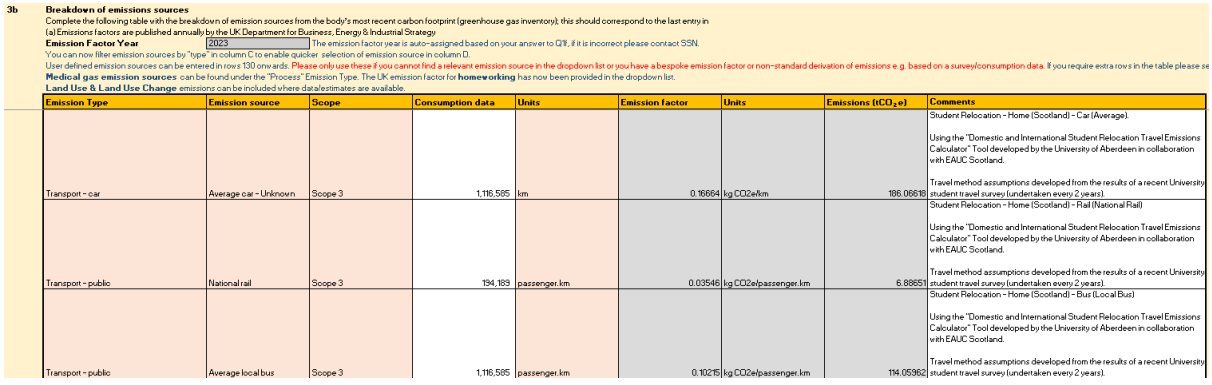
Travel Modes Summaries

PBCCD Data Table	
Travel Mode	**Distance Traveled**
Car	1,624,019.71
Rail	667,838.13
Coach	0.00
Local Bus	1,150,370.31
Taxi	33,785.10
Ferry	0.00
Domestic Flight	8,050,657.79
Short-Haul Flight	3,546,143.12
Long-Haul Flight	55,993,754.16
TOTAL	**71,066,568.32**

If a more detailed breakdown is desired for an institution's PBCCD submission, the following region level table is also available:

	Split Between Travel Modes (km)								
Region	**Car**	**Rail**	**Coach**	**Local Bus**	**Taxi**	**Ferry**	**Domestic flight**	**Short-haul flight**	**Long-haul flight**
Africa	0.00	0.00	5,292.00	5,292.00	5,292.00	0.00	1,343,284.63	0.00	9,710,311.64
Asia	0.00	0.00	14,418.00	14,418.00	14,418.00	0.00	3,659,765.27	0.00	39,510,882.48
Europe	0.00	0.00	7,182.00	7,182.00	7,182.00	0.00	1,823,029.14	3,279,235.51	0.00
Home	698,113.55	119,324.10	0.00	698,113.55	12,000.00	0.00	0.00	0.00	0.00
North America	0.00	0.00	3,915.00	3,915.00	3,915.00	0.00	993,756.49	0.00	9,647,572.41
Oceania	0.00	0.00	297.00	297.00	297.00	0.00	75,388.42	0.00	1,787,325.92
South America	0.00	0.00	351.00	351.00	351.00	0.00	89,095.41	0.00	1,209,605.61
UK	476,466.68	476,466.68	4,131.00	4,131.00	4,131.00	0.00	940,540.35	0.00	0.00

When submitting the data, ensure that as much information is provided; how the assumptions were developed, what tool was used, etc.



3b **Breakdown of emissions sources**

Complete the following table with the breakdown of emission sources from the body's most recent carbon footprint (greenhouse gas inventory); this should correspond to the last entry in (a) Emissions factors are published annually by the UK Department for Business, Energy & Industrial Strategy

Emission Factor Year 2023 The emission factor year is auto-assigned based on your answer to Q11, if it is incorrect please contact SSN.

You can now filter emission sources by "type" in column C to enable quicker selection of emission source in column D.

User defined emission sources can be entered in rows 130 onwards. Please only use these if you cannot find a relevant emission source in the dropdown list or you have a bespoke emission factor or non-standard derivation of emissions e.g. based on a survey/consumption data. If you require extra rows in the table please se

Medical gas emission sources can be found under the "Process" Emission Type. The UK emission factor for **homeworking** has now been provided in the dropdown list.

Land Use & Land Use Change emissions can be included where data/estimates are available.

Emission Type	Emission source	Scope	Consumption data	Units	Emission factor	Units	Emissions (tCO_2e)	Comments
Transport - car	Average car - Unknown	Scope 3	1,116,585	km	0.16664	kg CO2e/km	186.06618	Student Relocation - Home (Scotland) - Car (Average). Using the "Domestic and International Student Relocation Travel Emissions Calculator" Tool developed by the University of Aberdeen in collaboration with EAUC Scotland. Travel method assumptions developed from the results of a recent University student travel survey (undertaken every 2 years).
Transport - public	National rail	Scope 3	194,189	passenger.km	0.03546	kg CO2e/passenger.km	6.88651	Student Relocation - Home (Scotland) - Rail (National Rail) Using the "Domestic and International Student Relocation Travel Emissions Calculator" Tool developed by the University of Aberdeen in collaboration with EAUC Scotland. Travel method assumptions developed from the results of a recent University student travel survey (undertaken every 2 years).
Transport - public	Average local bus	Scope 3	1,116,585	passenger.km	0.10215	kg CO2e/passenger.km	114.05962	Student Relocation - Home (Scotland) - Bus (Local Bus) Using the "Domestic and International Student Relocation Travel Emissions Calculator" Tool developed by the University of Aberdeen in collaboration with EAUC Scotland. Travel method assumptions developed from the results of a recent University student travel survey (undertaken every 2 years).

An example of a completed PBCCD submission with student relocation emissions reported can be found here:

https://sustainablescotlandnetwork.org/reports/university-of-aberdeen

Appendix A – Student Survey Questions

The following questions were included in the University of Aberdeen's 2023 Staff & Student Transport Survey to inform our student relocation travel mode assumptions.

Home Address Travel

The University would like to learn more about the emissions associated with student travel between your permanent home address and the University. This includes any rail, air or other travel to Aberdeen at the beginning and end of the academic year. This section is **not** about your daily commuting travel while you are in Aberdeen; there will be separate questions about your daily commuting habits later in the survey. In the following questions we are interested only in travel between your permanent home address and Aberdeen e.g., coming to Aberdeen at the start of the academic year, and going home during term to visit family.

Which of the following best represents your permanent home address?

- ❑ Scotland - Local (within a daily commutable distance of Aberdeen) e.g., Aberdeenshire
- ❑ Scotland - Other (in Scotland but not within an easy commutable distance of Aberdeen) e.g., Glasgow
- ❑ UK - Outside Scotland
- ❑ Europe
- ❑ Africa
- ❑ Asia and the Middle East
- ❑ North America, Central America, and the Caribbean
- ❑ South America
- ❑ Australia and Oceania
- ❑ Other

Other (Please Specify)

_____

_____

How often do you make a return trip between your permanent home address and the University? Please count the journey to Aberdeen at the start of the academic year and home at the end of the academic year as one return trip.

- ❑ 1 return journey - (at the start and end of the academic year only)
- ❑ 2 return journeys (at the start and end of the academic year plus an additional return trip, for example over the winter holiday period)
- ❑ 3 return journeys
- ❑ 4 or more return journeys

What is your MAIN mode of transport between your home address and the University?

- ❑ Car
- ❑ Bus
- ❑ Train
- ❑ Aeroplane (Economy)
- ❑ Aeroplane (Business or First Class)
- ❑ Other

Other (Please Specify)

_____

_____