

Greenhouse Gas Emissions Assessment - Steffie Broer - Trip to Austria



THE APPROACH

Climate change, caused by the emission of greenhouse gases (GHGs), threatens to have severe impacts on the environment and society over the next 100 years. A company that wants to manage and reduce its climate change impact should first determine the size of its "carbon footprint".

Emissions have been calculated by multiplying data provided for particular activities by emission factors; for example an emission factor is used to convert litres of petrol consumed into the amount of CO₂ emitted at tailpipe. The emission factors used in the assessment are taken from the UK Government's guidelines and other reputable sources (see references at the end of the report). This report covers the 6 Kyoto gases, expressed in carbon dioxide equivalents, or CO₂e.

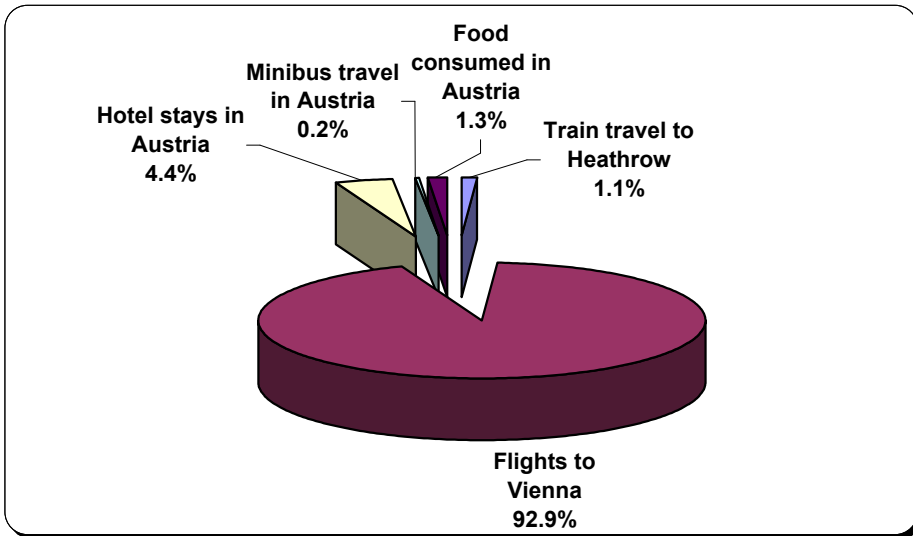
The results from the different activities have been summed to provide an estimate of CO₂e emissions for the activities of the company for the specified year, representing the company's annual carbon footprint. The reliability of the estimate depends on the quality and coverage of data provided. Boundary issues have not been investigated.

Company size and business activities will change over time, and GHG emissions will increase or decrease as a result. To ensure that the impact of these changes on the carbon footprint is captured and quantified, it is recommended that emissions be reassessed annually.

Disclaimer: *The fundamental assumption underlying the assessment is that all data provided by the client are accurate and complete.*

SUMMARY

Source of Emissions	Equivalent emissions		Proportion of total
	CO ₂ (t/yr)	C (t/yr)	
Train travel to Heathrow	0.20	0.05	1.1%
Flights to Vienna	16	4.4	93%
Hotel stays in Austria	0.8	0.2	4.4%
Minibus travel in Austria	0.04	0.01	0.2%
Food consumed in Austria	0.23	0.1	1.3%
Total	17	4.7	100%



TRAVEL TO HEATHROW

Source of emissions	Total distance travelled (pass.km)	Total CO ₂ equiv.	
		(t)	Total C equiv. (t)
Train travel to Heathrow	3,282	0.2	0.05
Total	3,282	0.2	0.05

Data collection period: *Trip to Austria*

All figures in italics are supplied by the client

Assumptions

Average distance to heathrow:	<i>60</i> miles
Number of passengers:	<i>17</i>
CO ₂ emissions for trains:	<i>0.0602</i> kgCO ₂ /pass.km (Defra 2007)
Conversion miles to kilometres:	<i>1.609</i> km/mile

FLIGHTS FROM HEATHROW TO VIENNA

Source of emissions	Total distance travelled (pass.km)	CO ₂ emitted (t)	CH ₄ emitted (t)	N ₂ O emitted (t)	Total CO ₂ equiv. (t)	Total C equiv. (t)
Return flights to Vienna	47,226	16	0.00005	0.0002	16	4.4
Total	47,226	16	0.0000	0.0002	16	4.4

Data collection period: *Trip to Austria*

All figures in italics are supplied by the client

Assumptions

Distance between Heathrow and Vienna:	1,274 km (airrouting.com)
Number of people travelling:	17 people
CO ₂ emissions for short-haul flights:	0.1304 kgCO ₂ /pass.km (Defra 2007)
CH ₄ emissions for short-haul flights:	0.001 gCH ₄ /pass.km (derived from IPCC 2006, Defra 2007, Carbon Trust 2006 & Boeing 2007)
N ₂ O emissions for short-haul flights:	0.004 gN ₂ O/pass.km (derived from IPCC 2006, Defra 2007, Carbon Trust 2006 & Boeing 2007)
Uplift factor, taking into account non-direct routing:	109% (Defra 2007)
Multiplication factor for radiative forcing impacts:	2.6 times (Royal Commission on Environmental Pollution 2002)
Global warming potential (in CO ₂ equivalents) of CH ₄ :	23 (IPCC 2001)
Global warming potential (in CO ₂ equivalents) of N ₂ O:	296 (IPCC 2001)

HOTEL STAYS

Source of Emissions	Hotel room nights	CO ₂ emitted (t)	Equivalent C (t)
Hotel stays in Vienna	34	0.8	0.2
Total	34	0.8	0.2

Data collection period:

*Trip to Austria**All figures in italics are supplied by the client***Assumptions**

Number of people travelling:

17 people

Number of nights spent in hotels:

2 nightsCO₂ emissions for hotel accommodation (Austria):*22.14* kgCO₂/room/night (derived from Defra 2007 and WBCSD 2006)

MINIBUS TRAVEL IN AUSTRIA

Source of emissions	Distance travelled (km)	CO ₂ emitted (t)	CH ₄ emitted (t)	N ₂ O emitted (t)	Total CO ₂ equiv. (t)	Total C equiv. (t)
Minibus travel in Austria	161	0.04	0.0000004	0.000001	0.04	0.01
Total	161	0.04	0.0000004	0.000001	0.04	0.01

Data collection period:

*Trip to Austria**All figures in italics are supplied by the client***Assumptions****ECCM assume that the minibuses hired have similar emissions to a ford transit 9 seater minibus.**

Number of minibuses hired:

2

Average distance travelled:

50 milesCO₂ emissions for a ford transit SWB bus:*208* g/km (VCA car fuel data)CH₄ emissions for light duty diesel vehicles:*0.0024* gCH₄/km (IPCC 2006)N₂O emissions for light duty diesel vehicles:*0.0078* gN₂O/km (IPCC 2006)

Uplift factor to take into account real-world driving:

115% (Defra 2007)Global warming potential (in CO₂ equivalents) of CH₄:*23* (IPCC 2001)Global warming potential (in CO₂ equivalents) of N₂O:*296* (IPCC 2001)

Conversion miles to kilometres:

1.609 km/mile

REFERENCES

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WBCSD 2006 Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard