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CO_2 REPORT BUSINESS TRAVEL

FOR: .... mascontour GmbH

REPORTING PERIOD:............................. 01.01.2022 - 31.12.2022

This report covers the following travel activity types:

FLIGHT CAR RAIL HOTEL

The calculations in this report are compliant with the following standards:

VDR Verband Deutsches Reisemanagement e.V.

GRI Empowering Sustainable Decisions

GREENHOUSE GAS PROTOCOL

defra Department for Environment Food and Rural Affairs

ICAO • OACI • ИКАО

VFU

Audited by:

DNV·GL

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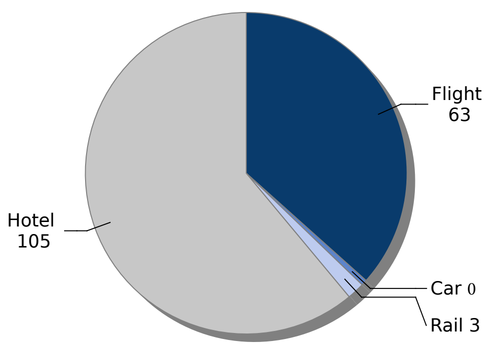
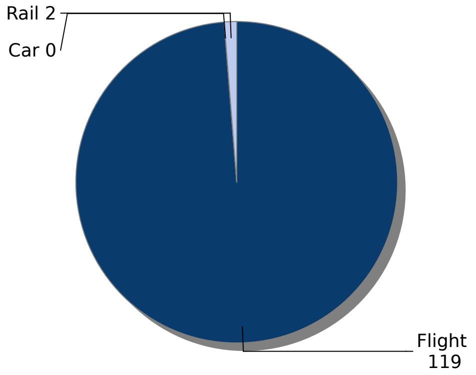
SUMMARY

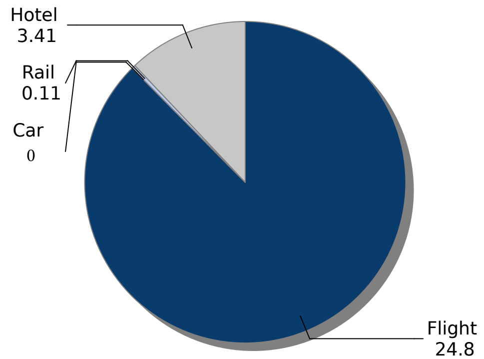
PASSENGERS (PAX) TOTAL:



DISTANCE TOTAL [1,000 KM]:



CO_2 EMISSIONS[1] TOTAL [TONS]:



[1] CO_2 emissions calculated according to VDR methodology. CO_2 emissions for category FLIGHT include RFI 2.7 addition.

SUMMARY

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	Pax [total]	Pax [% of total]	Distance [1,000 km]	Distance [% of total]	CO_2 emissions[1] [tons]	CO_2 emissions[1] [% of total]
FLIGHT	63	36.6	119	98.8	24.8	87.6
CAR	0	0	0	0	0	0
RAIL	3	1.7	2	1.2	0.11	0.4
HOTEL	105	61.0			3.41	12.1
TOTAL	172	100	121	100	28.3	100

[1] CO_2 emissions calculated according to VDR methodology.
[2] Category FLIGHT includes RFI 2.7 addition.

FLIGHT

TRAVEL	Amount	Unit
Kilometres	119	1,000 km
Miles[1]	74	1,000 miles
Segments[2]	63	
City Pairs	21	
Average segment distance in km[3]	1,896	km
Average segment distance in miles[3]	1,178	miles

FUEL	Amount	Unit
Fuel consumption total	3.10	tons fuel
Fuel consumptions in altitudes > 9 km	2.37	tons fuel
Fuel share in altitudes > 9 km	76.6	%
Average fuel consumption (per 100 pkm[4])	3.6	litres

CO_2 EMISSIONS	Amount	Unit
According to VDR		
CO_2	9.78	tons CO_2
CO_2 per segment, average	0.16	tons CO_2
CO_2 per passenger kilometre, average	81.9	g CO_2 / pkm
CO_2 per passenger mile, average	132	g CO_2 / pm
According to other methods		
CO_2 GRI / GHG Protocol	10.6	tons CO_2
CO_2 DEFRA	18.8	tons CO_2
CO_2 ICAO	9.72	tons CO_2
CO_2 VFU	13.0	tons CO_2

GLOBAL WARMING IMPACT[5]	Amount	Unit
According to VDR		
CO_2 in altitudes < 9 km	2.29	tons CO_2
CO_2 in altitudes > 9 km	7.49	tons CO_2
CO_2 + RFI 2	17.3	tons CO_2
CO_2 + RFI 2.7	24.8	tons CO_2
CO_2 + RFI 4	32.3	tons CO_2

[1] American miles
[2] One person, one way, from origin to destination
[3] Total distance of all segments divided by number of segments
[4] Product of number of passengers and kilometres travelled
[5] For further information on other methods and global warming impact see glossary.

FLIGHT

Top 10 city pairs by segments[1] and CO_2 emissions

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Origin	Destination	Segments	Segments % of total	Flight segment length [km]	Flight segment length [miles]	Total distance [km]	Total distance [miles]	Cruise altitude [m]	CO_2 emissions[2] [tons CO_2]	CO_2 emissions[2] + RFI 2.7 [tons CO_2]	CO_2 + RFI 2.7 % of total
TOP 10 CITY PAIRS SORTED BY SEGMENTS											
IST	TAS	10	15.9	3,457	2,149	34,570	21,485	12,500	2.62	7.45	30.1
BER	IST	8	12.7	1,769	1,099	14,151	8,795	9,700	1.25	2.96	11.9
BER	VIE	7	11.1	553	344	3,874	2,408	9,500	0.60	0.77	3.1
NCU	TAS	6	9.5	909	565	5,454	3,390	12,100	0.42	1.02	4.1
BRU	IST	4	6.3	2,265	1,408	9,060	5,631	13,100	0.65	1.81	7.3
TGD	VIE	4	6.3	771	479	3,084	1,917	12,100	0.28	0.63	2.6
MAD	SDQ	2	3.2	6,812	4,234	13,624	8,467	12,100	0.97	2.83	11.4
BRU	TLV	2	3.2	3,348	2,081	6,696	4,162	11,300	0.64	1.81	7.3
FRU	IST	2	3.2	3,830	2,380	7,660	4,761	12,500	0.48	1.36	5.5
BER	MAD	2	3.2	1,949	1,211	3,898	2,423	12,100	0.30	0.81	3.3
Other		16	25.4	--	--	17,383	10,804	--	1.57	3.31	13.4
TOP 10 CITY PAIRS SORTED BY CO_2 EMISSIONS											
IST	TAS	10	15.9	3,457	2,149	34,570	21,485	12,500	2.62	7.45	30.1
BER	IST	8	12.7	1,769	1,099	14,151	8,795	9,700	1.25	2.96	11.9
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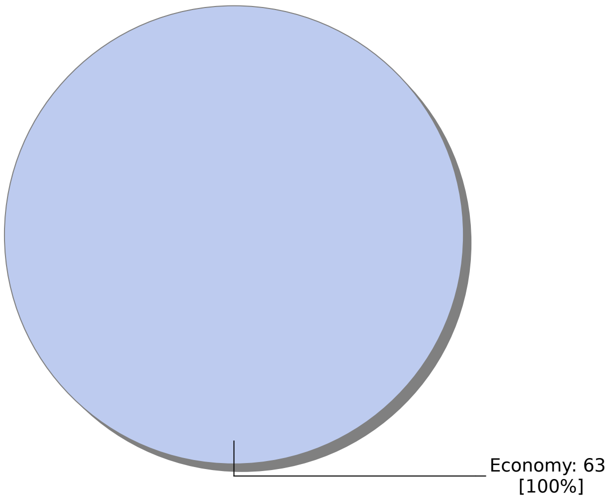
NCU	TAS	6	9.5	909	565	5,454	3,390	12,100	0.42	1.02	4.1
BER	MAD	2	3.2	1,949	1,211	3,898	2,423	12,100	0.30	0.81	3.3
EVN	VIE	2	3.2	2,472	1,536	4,944	3,073	12,100	0.28	0.78	3.1
BER	VIE	7	11.1	553	344	3,874	2,408	9,500	0.60	0.77	3.1
Other		18	28.6	--	--	15,523	9,648	--	1.57	3.17	12.8

[1] One person, one way, from origin to destination
[2] CO_2 emissions calculated according to VDR methodology.

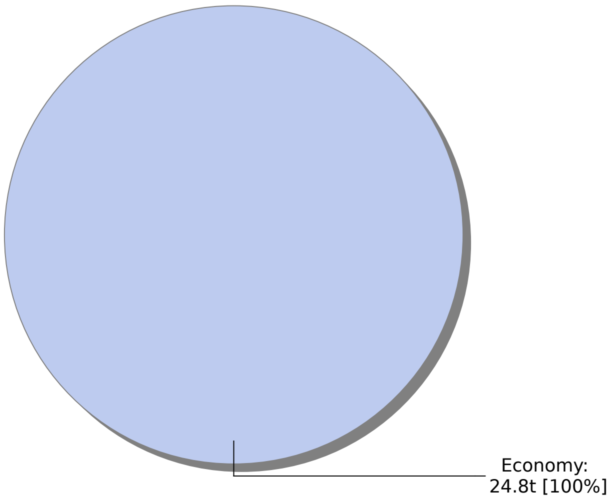
FLIGHT

Seat class compared by segments[1] and CO_2 emissions

SEGMENTS PER SEAT CLASS:



CO_2 EMISSIONS[2] PER SEAT CLASS [CO_2 + RFI 2.7]:

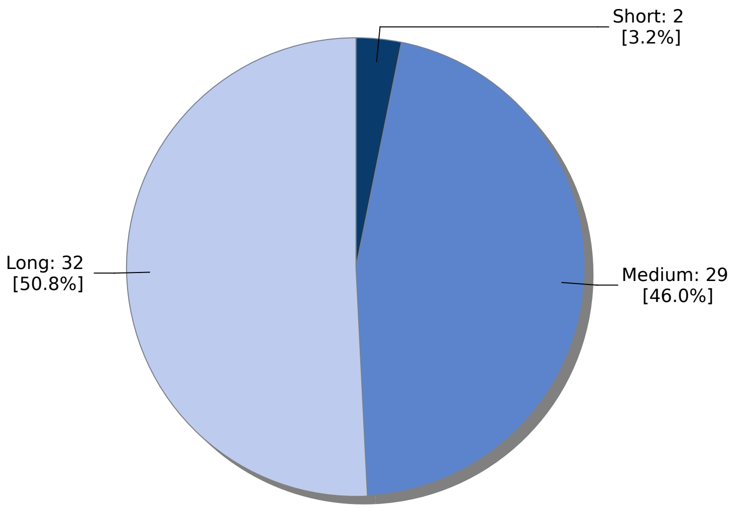


[1] One person, one way, from origin to destination
[2] CO_2 emissions calculated according to VDR methodology.

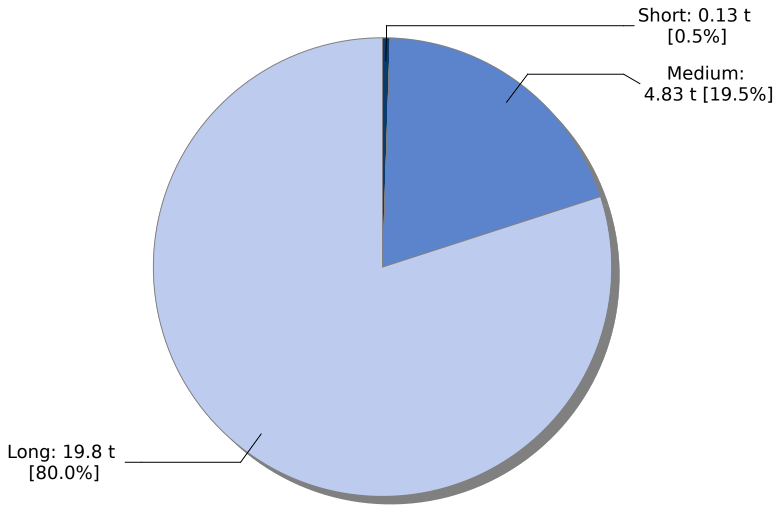
FLIGHT

Distance class[1] compared by segments[2] and CO_2 emissions

SEGMENTS PER DISTANCE CLASS:



CO_2 EMISSIONS[3] PER DISTANCE CLASS [CO_2 + RFI 2.7]:



[1] Short: < 500 km, < 310 miles; Medium: 500 km - 1600km, 310 - 1000 miles;
Long: > 1600 km, > 1000 miles
[2] One person, one way, from origin to destination
[3] CO_2 emissions calculated according to VDR methodology.

FLIGHT

Synopsis of different CO_2 calculation methods

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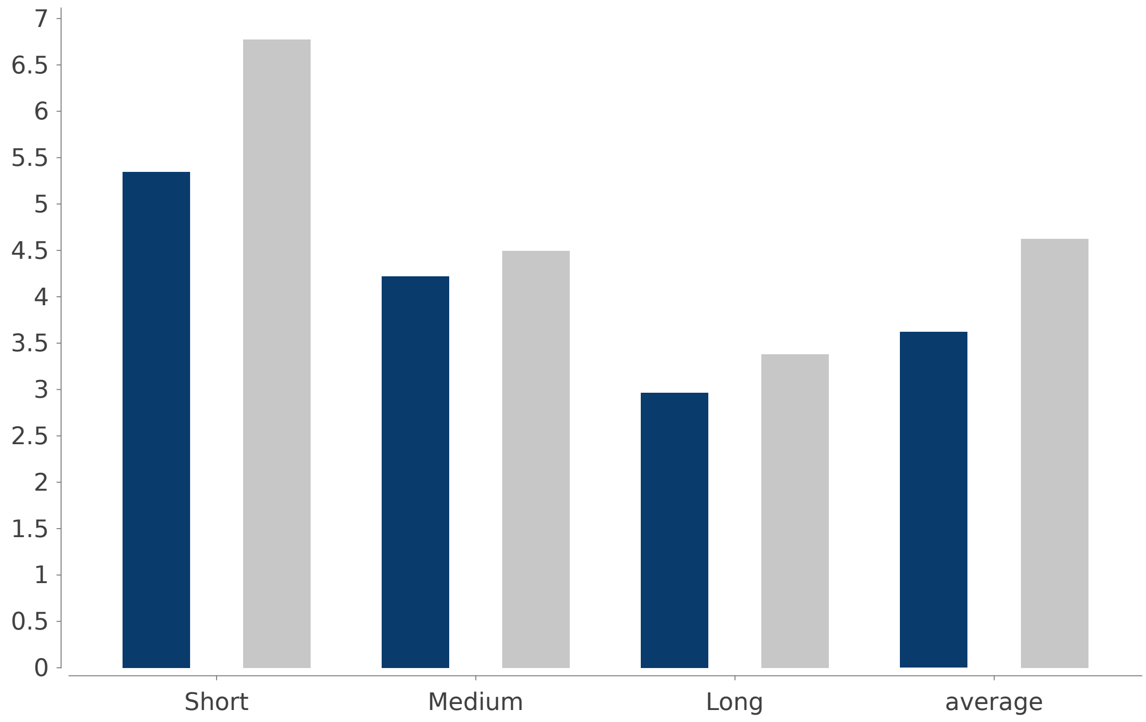
	Short Range [< 500 km] [< 310 miles]	Medium Range [500 - 1,600 km] [310 - 1,000 miles]	Long Range [> 1,600 km] [> 1,000 miles]
Segments[1]	2	29	32
Total distance in kilometres [1,000 km]	1	24	95
Total distance in miles [1,000 miles][2]	1	15	59
CO_2 EMISSIONS ACCORDING TO VDR STANDARD[3]			
CO_2 [tons CO_2]	0.13	2.46	7.19
CO_2 + RFI 2 [tons CO_2]	0.13	3.65	13.5
CO_2 + RFI 2,7 [tons CO_2]	0.13	4.83	19.8
CO_2 + RFI 4 [tons CO_2]	0.13	6.01	26.1
CO_2 EMISSIONS ACCORDING TO GRI / GHG PROTOCOL			
CO_2 [tons CO_2]	0.16	2.16	8.30
CO_2 EMISSIONS ACCORDING TO DEFRA			
CO_2 [tons CO_2]	0.25	3.69	14.9
CO_2 EMISSIONS ACCORDING TO ICAO[3]			
CO_2 [tons CO_2]	0.12	2.59	7.01
CO_2 EMISSIONS ACCORDING TO VFU[3]			
CO_2 [tons CO_2]	0.19	2.60	10.3

[1] One person, one way, from origin to destination
[2] American miles
[3] For further information on other methods and RFI, see glossary

FLIGHT

Fuel per 100 pkm[1] vs. international benchmarks



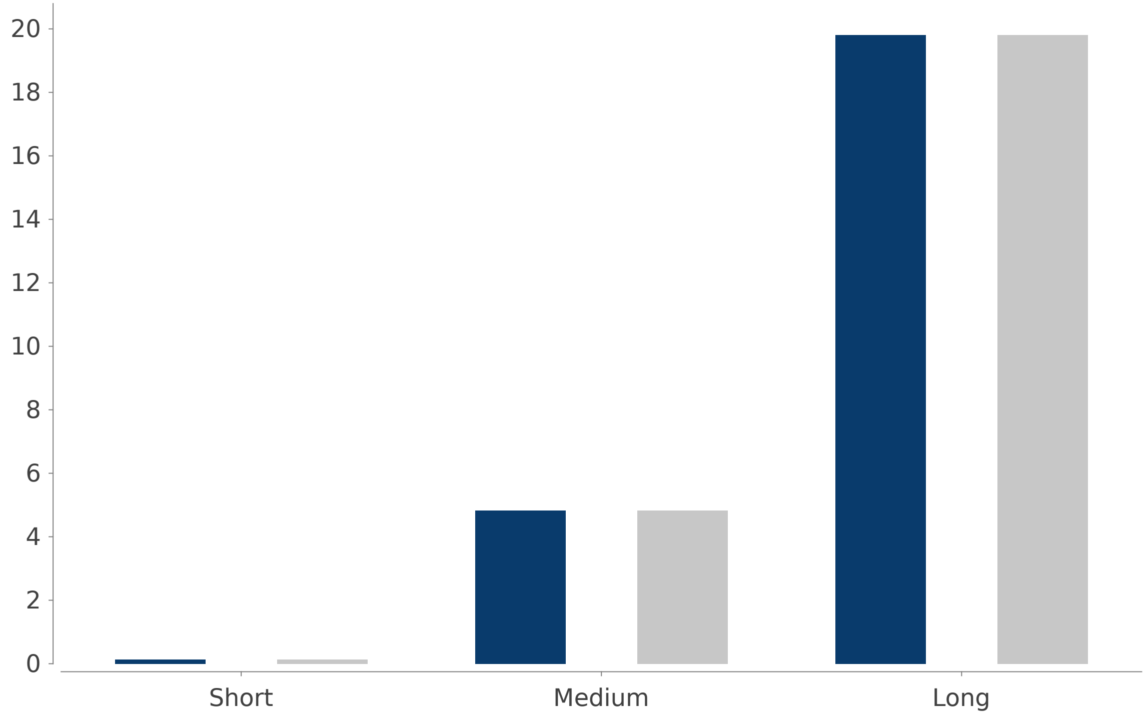
Current fuel usage: Calculated for flights contained in this report

Worldwide average[2]

[1] Product of number of passengers and kilometres travelled
[2] According to atmosfair Airline Index;
More informationen on the AAI: www.atmosfair.de/en/atmosfair_airline_index

FLIGHT

CO_2 reduction potential by switching to economy class



Current CO_2 emissions[1]: Calculated for flights contained in this report

Reduced CO_2 emissions[1]: All flights changed to economy class

[1] CO_2 emissions calculated according to VDR methodology.

FLIGHT

Applying the atmosfair Airline Index: Effects from selecting more climate efficient airlines

Flight selected from your upload data: TK371, 18.06.2022, IST-TAS, Economy Class

Airline[1] of your choice	Aircraft your staff flew with	Resulting CO_2 emissions[1,2] in tons (CO_2 + RFI 2.7)
Turkish Airlines	Airbus A330-200	0.80

Alternative airlines	Aircraft that would have been used	Alternative CO_2 emissions[2] in tons (CO_2 + RFI 2.7)
Uzbekistan Airways	Airbus A320	0.50

The atmosfair Airline Index compares airlines based on their climate efficiency. This allows us to identify more climate efficient carriers on any specific connection as shown in the example above.

For obvious reasons we would focus on your company's most emission intensive citypairs in a full analysis. But we don't stop there. We also compare the price structure of the most climate efficient carriers to show you real win-win-potentials: a reduction of emissions while saving travel expenses at the same time. This cost saving effect can of course be even enhanced further if your company limits the number of airlines to achieve additional quantity rebates with cleaner and cheaper carriers.

Are you interested in assessing the CO_2 efficiency of airlines serving your top city pairs? Contact us at airlineindex@atmosfair.de

[1] Code share partner are not listed. They appear in detailed atmosfair airline reportings.
[2] CO_2 emissions calculated according to VDR methodology.

RAIL

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TRAVEL	Amount	Unit
Kilometres	2	1,000 km
Miles[1]	1	1,000 miles
Segments[2]	3	
City Pairs	3	
Average segment distance in km[3]	500	km
Average segment distance in miles[3]	311	miles

CO_2 EMISSIONS[4]	Amount	Unit
CO_2	0.11	tons CO_2
CO_2 per segment, average	35,733	g CO_2
CO_2 per passenger kilometre, average	71.4	g CO_2/km
CO_2 per passenger mile, average	115	g CO_2/mile

[1] American miles
[2] One person, one way, from origin to destination
[3] Total distance of all segments divided by number of segments
[4] CO_2 emissions calculated according to VDR methodology.

RAIL

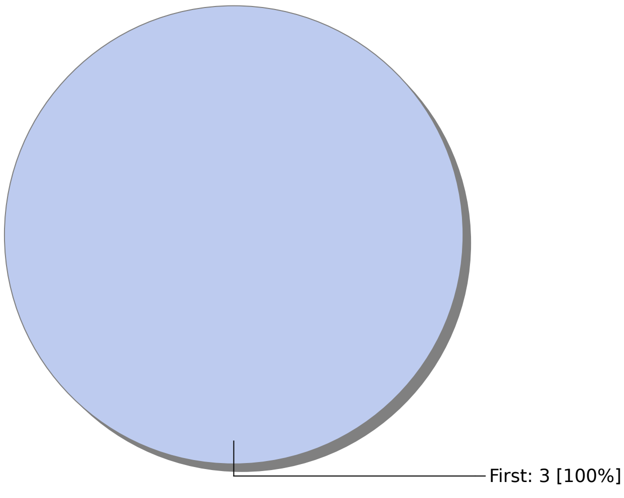
Top 10 city pairs by segments[1] and CO_2 emissions

Routing	Segments	Segment length [km]	Segment length [miles]	Total distance [km]	Total distance [miles]	CO_2 emissions[2] [tons]	% of CO_2 emissions[2]
TOP 10 - SORTED BY KILOMETRES							
Berlin Hbf - Tübingen Hbf	1	730	454	730	454	0.05	48.6
Berlin Hbf - Leipzig Hbf	1	200	124	200	124	0.01	13.3
Berlin Hbf - Frankfurt Hbf (tief)	1	571	355	571	355	0.04	38.1
TOP 10 – SORTED BY CO_2 EMISSIONS							
Berlin Hbf - Tübingen Hbf	1	730	454	730	454	0.05	48.6
Berlin Hbf - Frankfurt Hbf (tief)	1	571	355	571	355	0.04	38.1
Berlin Hbf - Leipzig Hbf	1	200	124	200	124	0.01	13.3

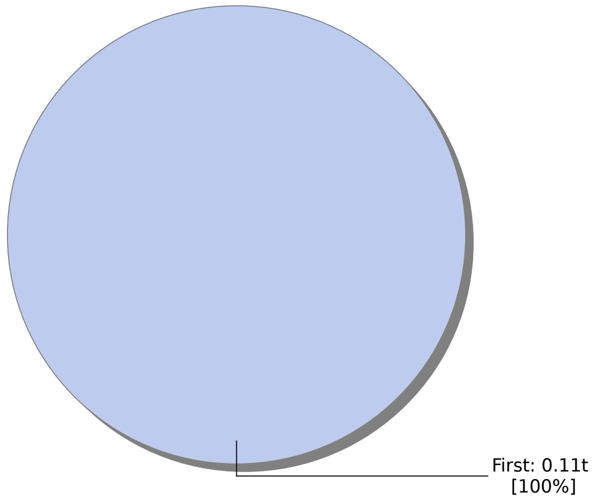
[1] One person, one way, from origin to destination
[2] CO_2 emissions calculated according to VDR methodology.

Seat class compared by segments[1] and CO_2 emissions

SEGMENTS PER SEAT CLASS:



CO_2 EMISSIONS[2] PER SEAT CLASS:



[1] One person, one way, from origin to destination
[2] CO_2 emissions calculated according to VDR methodology.

HOTEL

HOTEL
Summary

HOTEL CLASS	Overnight stays [nights]
all hotel classes	105
1 star hotel	0
2 star hotel	0
3 star hotel	97
4 star hotel	8
5 star hotel	0
hotel class unknown	0

EMISSIONS	CO_2 emissions[1] [tons]
from all overnight stays, all hotel classes	3.41
per overnight stay, 1 star hotel	0
per overnight stay, 2 star hotel	0
per overnight stay, 3 star hotel	3.07
per overnight stay, 4 star hotel	0.34
per overnight stay, 5 star hotel	0
per overnight stay, hotel class unknown	0

[1] CO_2 emissions calculated according to VDR methodology.

HOTEL

CO_2 emissions and overnight stays per country and hotel category

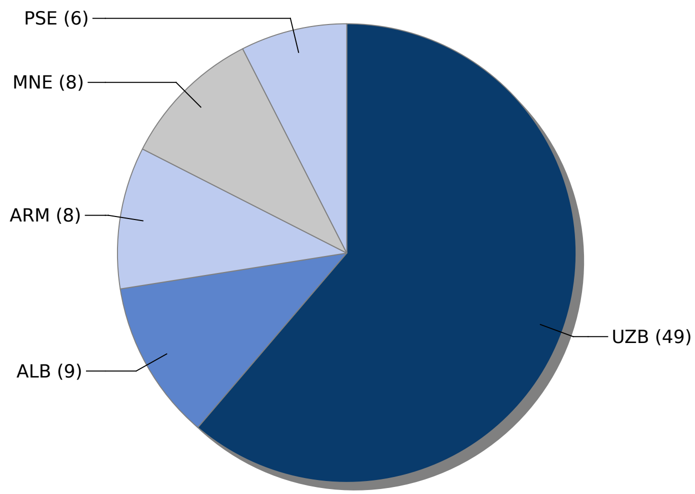
Country	1 star hotel	2 star hotel	3 star hotel	4 star hotel	5 star hotel	unknown
OVERNIGHT STAYS PER COUNTRY AND HOTEL CATEGORY						
UZB	0	0	49	0	0	0
ALB	0	0	9	0	0	0
ARM	0	0	8	0	0	0
MNE	0	0	0	8	0	0
PSE	0	0	6	0	0	0
CO_2 EMISSIONS[1] [TONS] PER COUNTRY AND HOTEL CATEGORY						
UZB	0	0	1.64	0	0	0
MNE	0	0	0	0.34	0	0
ALB	0	0	0.30	0	0	0
ARM	0	0	0.27	0	0	0
PSE	0	0	0.20	0	0	0

[1] CO_2 emissions calculated according to VDR methodology.

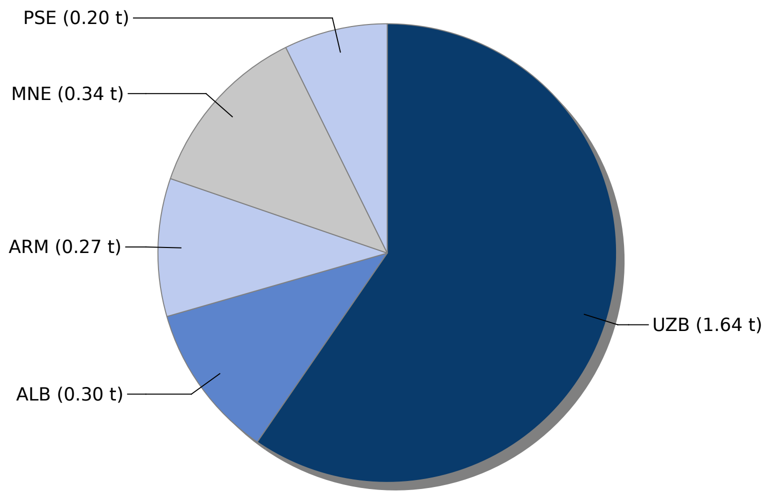
HOTEL

Countries compared by overnight stays and CO_2 emissions

OVERNIGHT STAYS PER COUNTRY:



CO_2 EMISSIONS[1] PER COUNTRY:



[1] CO_2 emissions calculated according to VDR methodology.

CARBON OFFSETTING WITH ATMOSFAIR

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DEALING WITH CO_2 EMISSIONS THAT CAN'T BE AVOIDED OR REDUCED

Travel activity type	CO_2 emissions[1] [tons]	Offsetting costs in EUR
FLIGHT[2]	24.8	570
CAR	0	0
RAIL	0.11	2
HOTEL	3.41	78

ATMOSFAIR OFFSET PROJECT EXAMPLES

Biogas from cow dung (Kenya): The project supplies small biogas units to dairy farmers which produce regenerative biogas.

Efficient fuel wood stoves (Nigeria): The efficient stoves save about 80% of energy and help to reduce deforestation and indoor air pollution.

[1] CO_2 emissions calculated according to VDR methodology.
[2] Category FLIGHT includes RFI 2.7 addition.

WHY OFFSETTING?

Offsetting is an essential part of a comprehensive carbon strategy that aims at reducing your company's climate impact. It is an effective way to deal with those emissions that can't be avoided or further reduced through other measures. As a flexible instrument that is always available, offsetting minimises uncertainties within your carbon strategy and supports your organisation in reaching your self-set emission reduction targets. Furthermore, offsetting is a highly visible climate protection measure that can easily be communicated not only to your employees, customers and rating agencies but to all your stakeholders.

ATMOSFAIR – AWARD WINNING OFFSET PROJECTS

Atmosfair is a non-profit organisation. We offer to offset the CO_2 emissions from your business travel activities through atmosfair projects, for example the installation of renewable energies in developing countries. atmosfair projects are UN-certif ed (CDM) and additionally comply with the Gold Standard. If you decide to offset with atmosfair you will receive a tax-deductible donation receipt (valid with the German tax of ce; other national regulation may apply).

atmosfair has been ranked No. 1 quality offset provider in international comparative studies since 2005. The assessed criteria were the quality of the offsetting projects and organisational as well as financial transparency.

ANNEXES

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WHO IS BEHIND VDR?

The German Business Travel Association VDR advocates efficient, economical and safe worldwide travel for companies. It represents the interest of German business regarding conditions for corporate travel and supports its members as a competence center for political activities.

WHAT ARE THE BENEFITS OF USING THE VDR STANDARD?

The VDR standard for the CO_2 calculation of corporate travel is a standardised method to determine CO_2 emissions created by business travel worldwide. Although previous approaches made it possible to estimate CO_2 emissions from business travel, none of them took the specific characteristics of business trips into account. The VDR standard covers all relevant business travel activities (flights, hotel, rental cars, rail) and meets the requirements for worldwide application, accuracy, comparability and independence. The standard is exact enough to highlight the potential for CO_2 reductions. Companies that generate their CO_2 reports using this standard are entitled to label them with the VDR logo and seal reading „produced according to the VDR standard.“

For full methodology details, please visit:
www.atmosfair.de/en/co2-bilanz_fuer_unternehmen

Disclaimer: *For maximum accuracy in calculating CO_2-emissions, we update our VDR database every year. For the travel activity flight for example these updates includes elements such as the most current flight plans, new airport locations, new aircraft types and most importantly new scientific findings if available.*

Due to inaccurate or incomplete customer travel data it can happen that the most precise calculation method suggested by the VDR standard can not be applied. In these cases fallback calculation methods are used which achieve the maximum precision that can be achieved with the provided data. In any case the calculations which this report is based on are compliant with the VDR standard.

VDR Verband Deutsches Reisemanagement e.V.

„... in atmosfair, the VDR has gained an experienced partner for creating their standard. The quality of atmosfair's calculation methods has often been proven, including by the Federal Environmental Agency.“

Dr. Norbert Röttgen,
Former federal minister for the Environment, Nature Conservation and Nuclear Safety

OTHER CALCULATION METHODS

GHG: The Greenhouse Gas (GHG) Protocol, developed by World Resources Institute (WRI) and World Business Council on Sustainable Development (WBCSD), sets the global standard for how to measure, manage, and report greenhouse gas emissions.The GHG Protocol simplifes the calculation of specific CO_2 per passenger in comparison to the VDR standard. Only the following factors are considered:
- Flight distance (great circle distance between the airports, multiplied by a blanket uplift factor for detours).
- Flight class: domestic, short-haul international, long-haul international.
- Booking class: A distinction is made between economy, premium economy, business and first class.

GRI: The Global Reporting Initiative (GRI) is an international independent organisation that helps businesses, governments and other organisations understand and communicate the impact of business operations on critical sustainability issues. GRI's approach for calculating emissions is based on the method of the GHG Protocol.

DEFRA: The UK Department for Environment, Food and Rural Affairs (DEFRA) has developed a tool for calculating the CO_2 emissions of travel activities such as flight, train journeys and car rides, among others. DEFRA's approach is based on the calculation method of the GHG Protocol but uses slightly different emission factors. From 2018 these include an uplift factor of 1.9 for considering non-CO_2 effects of air travel, as recommended by DEFRA.

ICAO: The International Civil Aviation Organization (ICAO) has developed an online calculator for its website which calculates CO_2 emissions from air travel. The associated method uses flight profiles with ascend and descend phases, distinguishes between different types of aircrafts and also considers factors such as passenger load and co-loaded freight. Nonetheless, the ICAO calculator also has disadvantages:
- If the city pair for which the CO_2 is to be calculated is not in the ICAO data base, the ICAO calculator yields no result.
- The ICAO calculator considers CO_2 emissions only. It does not take other climate effects such as condensation trails into account.
- There are only two seat classes: economy and premium.
- The ICAO calculator assumes a full-economy seat configuration of all aircrafts.

VFU: The German Verein für Umweltmanagement und Nachhaltigkeit in Finanzinstituten e.V. (VFU) has developed a systemof performance indicators to evaluate 'environmental performance'. Transportation is a sub-item and includestrain journeys, air travel as well as road trafic. Just like the GHG Protocol and DEFRA methods the VFU tool simplifes the CO_2 calculation with their own emission factors.

Disclaimer: For maximum accuracy in calculating CO_2 emissions we update the databases of each reporting standard every year.

GLOSSARY

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GENERAL TERMS

MILES	American miles; 1 american mile = 1.609 kilometres
PKM	Passenger kilometre; product of number of passengers and kilometres travelled
SEGMENT	one person, one way, from origin to destination

FLIGHT TERMS

AVERAGE SEGMENT DISTANCE	Total distance of all flights divided by number of flights
CO_2 VDR	CO_2 emissions according to VDR methodology
CO_2 GRI / GHG	CO_2 emissions according to GRI / GHG methodology
CO_2 DEFRA	CO_2 emissions according to DEFRA methodology
CO_2 ICAO	CO_2 emissions according to ICAO methodology
CO_2 VFU	CO_2 emissions according to VFU methodology
CO_2 EMISSIONS IN ALTITUDES > 9 KM	CO_2 emissions from fuel burned above 9 kilometres altitude (RFI applied, see RFI)
CO_2 + RFI	Sum of CO_2 and NON CO_2 emissions converted into CO_2 emissions following the RFI logic (see RFI)
CRUISE ALTITUDE	Cruise altitude of an airplane. Above 9,000 metres the atmosphere is far more sensitive for exhaust emissions (see RFI)
RFI	Radiative forcing index, metrics established by the Intergovernmental Panel on Climate Change (IPCC) to measure the impact of effects such as condensation trails or ozone formation. The RFI was established by the IPCC in 1999. It measures the total climate impact, including contrails, ozone formation, etc. compared to the pure CO_2 emissions. An RFI of 2 means that the warming impact of the part of a flight that is conducted above 9 km altitude is twice as big as its CO_2 effect alone. The range of the RFI is between 2-4 with 2.7 being the best estimate of the IPCC.

GLOSSARY

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CAR TERMS

CO_2 .... CO_2 emissions according to VDR methodology
DAYS OF USE .... Total number of car rental days
DISTANCE CLASS .... Average kilometre per rental day

RAIL TERMS

CO_2 .... CO_2 emissions according to VDR methodology
AVERAGE SEGMENT DISTANCE .... Total distance of all train rides divided by number of train rides

HOTEL TERMS

CO_2 .... CO_2 emissions according to VDR methodology
OVERNIGHT STAYS .... Total number of overnight stays