RDC

Aviation Emissions Report
March 22

Emissions analysis for largest markets - March 22 vs prior years

25 largest markets by total emissions

Date Origin Country	March 2020 Total CO2 (Tonnes)	March 2021 Total CO2 (Tonnes)	March 2022 Total CO2 (Tonnes)
United States	13,539,892	8,260,464	11,835,376
China	3,969,660	6,546,523	5,052,714
United Kingdom, UK	2,130,664	350,218	1,581,631
India	1,696,217	1,212,520	1,555,443
United Arab Emirates	1,591,283	674,224	1,326,868
Spain and Canary Islands	1,091,044	270,860	1,134,345
Germany	1,271,540	384,998	1,077,898
Japan	1,799,177	752,390	1,031,658
France	1,184,187	434,207	1,004,394
Brazil	1,188,295	567,298	1,003,005
Mexico	990,933	642,022	938,716
Russian Federation	1,299,600	868,980	935,324
Canada	1,220,194	246,756	836,615
Turkey	725,618	491,526	824,862
Australia	1,402,807	546,344	804,102
Qatar	676,047	473,066	661,860
Indonesia	1,114,053	640,914	636,293
Italy	445,560	132,247	569,244
Saudi Arabia	614,821	279,230	524,882
Netherlands	599,098	304,133	497,496
Singapore	652,189	206,385	405,068
Republic of Korea	499,983	391,969	378,513
Thailand	910,215	259,689	376,919
Vietnam	452,157	327,859	345,113
South Africa	425,718	161,146	303,429

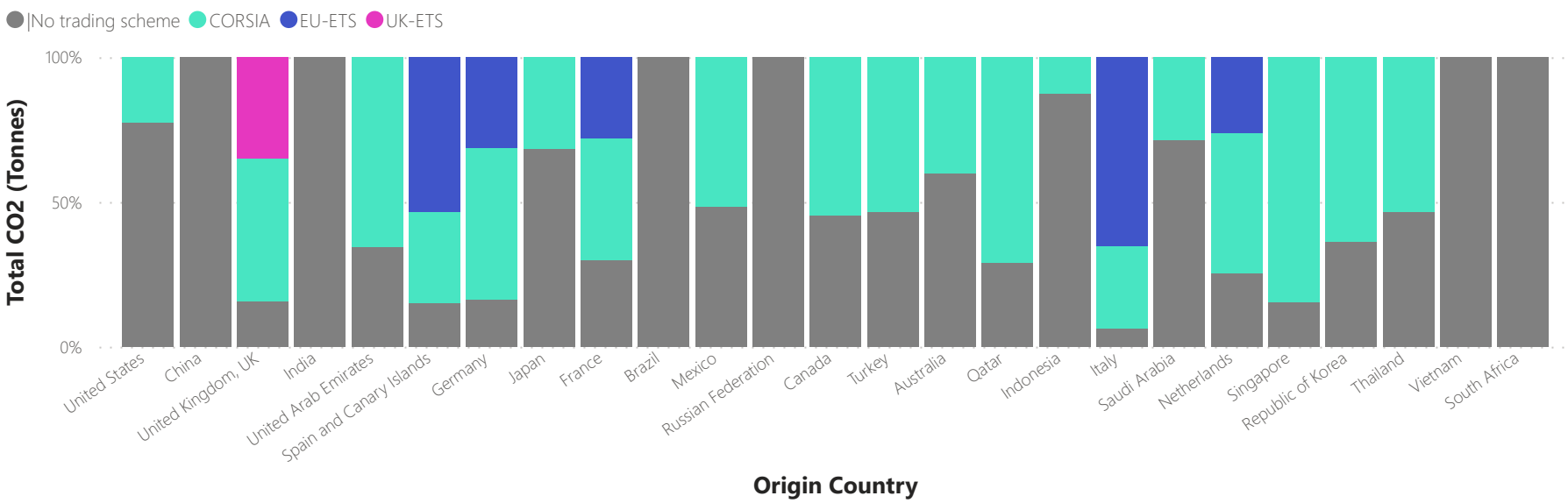
Change in Emissions - Current month vs prior years

This year vs last year	This year vs two years ago
43%	-13%
-23%	27%
352%	-26%
28%	-8%
97%	-17%
319%	4%
180%	-15%
37%	-43%
131%	-15%
77%	-16%
46%	-5%
8%	-28%
239%	-31%
68%	14%
47%	-43%
40%	-2%
-1%	-43%
330%	28%
88%	-15%
64%	-17%
96%	-38%
-3%	-24%
45%	-59%
5%	-24%
88%	-29%

Percent of Emissions covered by Compliance Programmes

March 2020 % covered	March 2021 % covered	March 2022 % covered
-	16.08%	22.49%
-	-	-
28.21%	78.24%	84.24%
-	-	-
-	57.75%	65.53%
47.73%	77.03%	85.10%
30.40%	77.64%	83.77%
-	35.31%	31.49%
24.43%	65.84%	69.94%
-	-	-
-	43.57%	51.52%
-	-	-
-	37.41%	54.76%
-	40.55%	53.39%
-	28.53%	40.01%
-	71.71%	70.87%
-	8.57%	12.50%
48.87%	88.77%	93.58%
-	12.47%	28.62%
21.44%	69.48%	74.54%
-	85.47%	84.52%
-	56.40%	63.64%
-	40.66%	53.44%
-	-	-
-	-	-

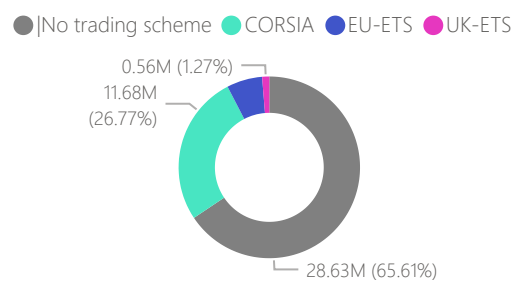
25 largest markets - emissions by Compliance Programme (current month)



Global emissions (tonnes)

43.63M

Emissions by compliance programme



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Emissions analysis for largest markets - YTD to Mar 22 vs prior years

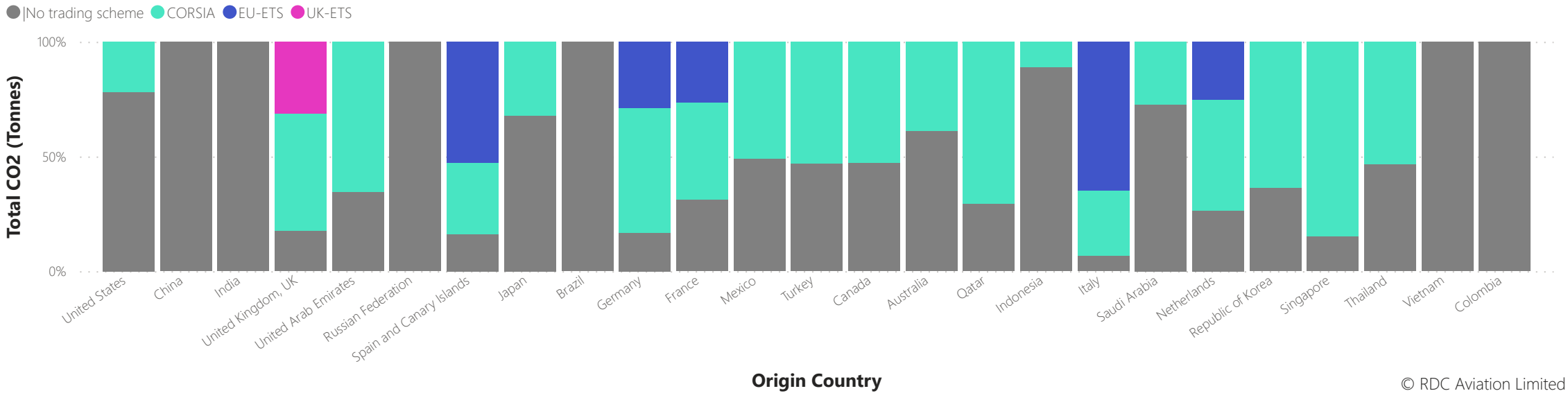
25 largest markets by total emissions

Change in Emissions - Current month vs prior years

Percent of Emissions covered by Compliance Programmes

YTD Period Origin Country	YTD 2 years ago Total CO2 (Tonnes)	YTD Last Year Total CO2 (Tonnes)	YTD This Year Total CO2 (Tonnes)	This YTD vs Last YTD	This YTD vs YTD two years ago	YTD 2 years ago Trading scheme %	YTD Last Year Trading scheme %	YTD This Year Trading scheme %
United States	40,702,897	21,519,556	33,177,828	54%	-18%	-	17.39%	21.93%
China	15,713,987	16,688,836	16,420,019	-2%	4%	-	-	-
India	5,460,957	3,406,195	4,158,969	22%	-24%	-	-	-
United Kingdom, UK	6,899,761	1,195,547	4,146,691	247%	-40%	27.40%	75.92%	82.21%
United Arab Emirates	5,509,170	1,924,795	3,701,643	92%	-33%	-	58.65%	65.32%
Russian Federation	4,075,933	2,394,761	3,113,737	30%	-24%	-	-	-
Spain and Canary Islands	3,691,165	885,379	3,015,401	241%	-18%	46.49%	76.35%	83.90%
Japan	6,249,479	2,313,274	2,982,282	29%	-52%	-	32.17%	32.21%
Brazil	3,856,077	1,958,655	2,967,181	51%	-23%	-	-	-
Germany	4,579,630	1,082,107	2,873,709	166%	-37%	28.39%	76.89%	83.04%
France	3,883,452	1,426,972	2,740,285	92%	-29%	23.50%	60.73%	68.63%
Mexico	3,025,054	1,942,030	2,708,697	39%	-10%	-	44.44%	50.77%
Turkey	2,613,734	1,330,517	2,340,110	76%	-10%	-	42.65%	52.95%
Canada	3,965,127	865,205	2,310,238	167%	-42%	-	38.15%	52.74%
Australia	4,812,793	1,423,871	2,101,704	48%	-56%	-	31.58%	38.68%
Qatar	2,247,606	1,316,067	1,868,108	42%	-17%	-	72.39%	70.44%
Indonesia	3,406,231	1,763,287	1,851,829	5%	-46%	-	8.70%	11.04%
Italy	2,121,991	390,458	1,468,504	276%	-31%	46.10%	88.00%	93.20%
Saudi Arabia	2,122,225	833,177	1,445,505	73%	-32%	-	13.78%	27.36%
Netherlands	1,915,050	917,405	1,382,522	51%	-28%	20.32%	69.35%	73.63%
Republic of Korea	2,802,818	1,124,880	1,141,401	1%	-59%	-	58.29%	63.48%
Singapore	2,577,537	566,684	1,119,190	97%	-57%	-	85.20%	84.67%
Thailand	3,481,610	682,699	1,059,829	55%	-70%	-	44.32%	53.29%
Vietnam	1,743,003	1,014,748	952,026	-6%	-45%	-	-	-
Colombia	874,073	439,480	837,773	91%	-4%	-	-	-

25 largest markets - emissions by Compliance Programme (current YTD)



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RDC CARE Index by carrier and home continent - March 22

Top 25 European Carriers

Carrier Name	CARE Index
Novair	7.7
PLAY	7.3
TUIfly Nordic	7.3
Iberojet	7.0
Wizz Air	7.0
TUI Airways	7.0
Jet2	7.0
La Compagnie	7.0
French Bee	6.9
Wizz Air UK	6.8
SmartWings	6.8
Buzz	6.8
Enter Air	6.8
Sunclass Airlines	6.8
Freebird Airlines	6.7
Malta Air	6.6
Corendon Airlines Europe	6.6
HiSky Europe SRL	6.6
SunExpress	6.5
Corendon Dutch Airlines	6.5
TUIfly Deutschland	6.5
Ryanair	6.4
Azores Airlines	6.4
Corendon Airlines	6.4
Sundair	6.3

Top 25 North American Carriers

Carrier Name	CARE Index
Air Transat	6.8
Frontier Airlines	6.7
Volaris	6.7
Flair Airlines	6.6
Sunwing Airlines	6.4
Sun Country	6.2
Swoop	6.1
WestJet	6.0
Aeromexico	5.9
Allegiant Air	5.9
Spirit Airlines	5.7
VivaAerobus	5.5
Air Canada Rouge	5.4
Avelo Air	5.4
Air Saint-Pierre	5.3
ConocoPhillips Alaska Inc	5.1
Aeromar	4.9
American Airlines	4.8
Delta Air Lines	4.6
United Airlines	4.6
Nolinor Aviation	4.3
Air Canada	4.2
WestJet Encore	4.2
Porter Airlines	4.1
Air North	3.8

Top 25 Asian Carriers

Carrier Name	CARE Index
AirAsia X	6.7
STARLUX Airlines	6.7
ZIPAIR Tokyo	6.7
Pan Pacific Airlines	6.6
Scoot	6.6
Air India Express	6.3
Nordwind Airlines	6.2
T'Way Air	6.2
Royal Flight	6.2
airblue	6.2
Nepal Airlines	6.2
NordStar Airlines	6.1
Tigerair Taiwan	6.1
MIAT Mongolian Airlines	6.1
Pobeda	6.0
Ural Airlines	5.9
West Air	5.9
Longjiang Airlines	5.9
Grand China Air	5.9
Himalaya Airlines	5.9
Royal Brunei Airlines	5.9
SMARTAVIA	5.8
Azur Air	5.8
Spring Airlines	5.8
Serene Air	5.8

Top 25 RoW Carriers

Carrier Name	CARE Index
Wizz Air Abu Dhabi	6.9
Arkia Israel Airlines	6.6
flydubai	6.5
SalamAir	6.5
Air Tahiti Nui	6.5
El Al	6.3
Syrian Air	6.2
Israir Airlines	6.1
LATAM Paraquay	6.1
Etihad Airways	6.0
Air Cairo	5.9
Copa Airlines	5.9
UR Airlines	5.9
Tarco Aviation	5.9
JetSmart Airlines S.A.	5.9
FlyEgypt	5.8
Badr Airlines	5.8
Flybondi	5.8
JetSmart	5.8
Nesma Airlines	5.8
Air Arabia Abu Dhabi	5.8
Surinam Airways	5.8
Air Arabia	5.7
Viva Air Peru	5.7
Sky Prime Aviation Services	5.7

The CARE Index is a measure of airline route sustainability, based around our emissions methodology and various other factors, that has been developed to give business and consumers the best information on which to make their purchasing decisions - particularly when it comes to making more environmentally friendly choices. Most 'efficiency measures' use CO2 per passenger, per seat or per available seat kilometre (ASK), which can be hard to understand for consumers. The CARE Index creates a score between 0 (worst) to 10 (best) for any air route, airline and aircraft combination, taking into account:

- fuel burn and **efficiency of the aircraft type**
- **efficiency of the airline** – using specific seat capacity, configuration and overall occupancy rates (load factor)
- use of **Sustainable Alternative Fuels (SAF)**
- if the route is part of a **compliance or regulatory emissions programme** such as EU ETS etc
- whether the **operator offsets any emissions over and above that which is legally required**

The CARE index has been designed to be a force for change, giving consumers better insight into the environmental impact of their chosen airline that will also help to shape airline sustainability strategies.

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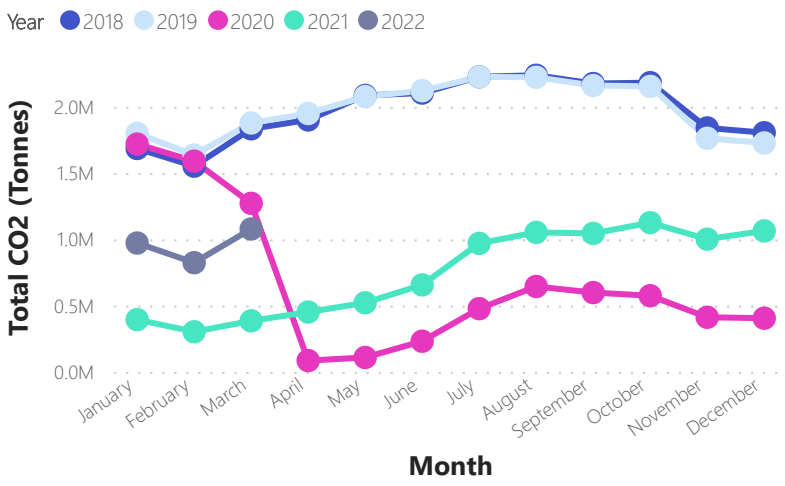
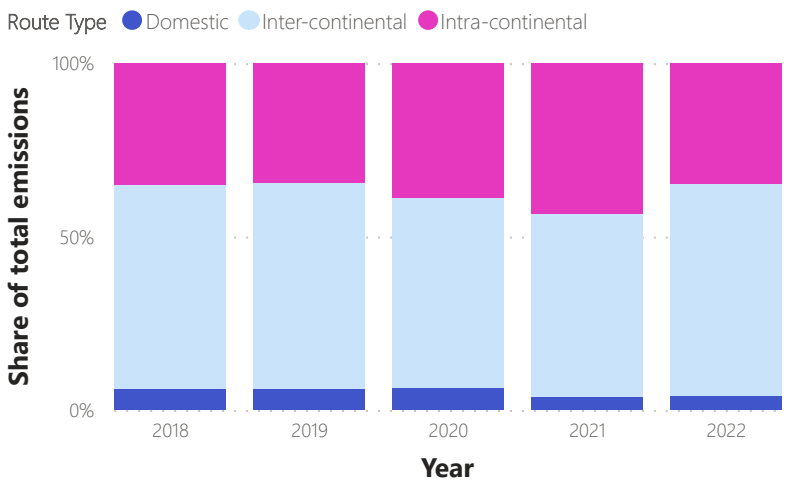
This month's focus country: Germany

Total CO2 (Tonnes) by Month and Year



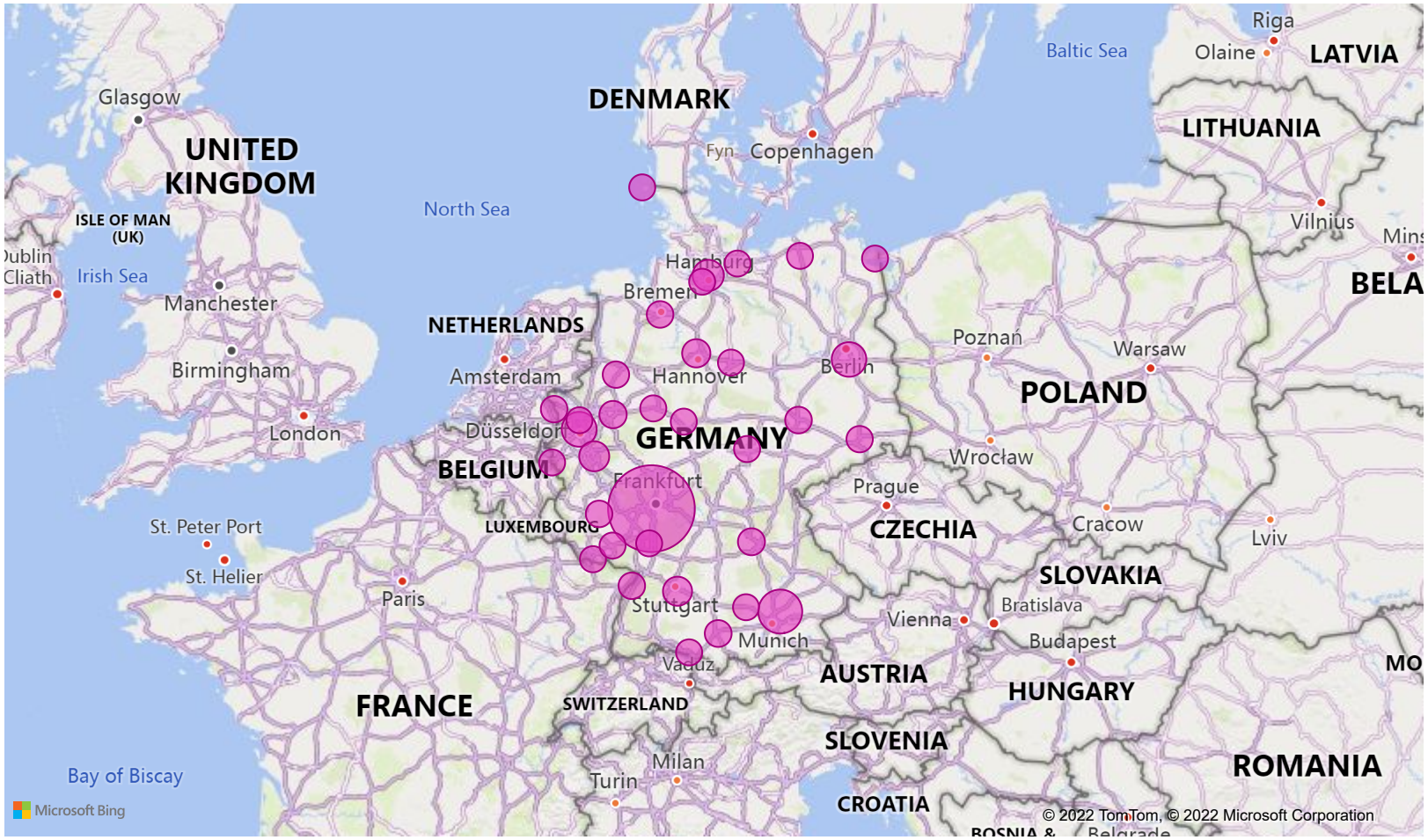
CO2 by Year and Route Type



10 largest markets by seat capacity ranked by lowest Emissions per ASK - last 12 months

Destination Country	Emissions per ASK (g)	Total CO2 (Tonnes)
Spain and Canary Islands	59.03	1,133,289
Portugal	59.20	230,290
Greece	59.24	465,061
Turkey	59.71	951,598
Italy	72.42	275,498
United States	72.88	1,892,883
United Kingdom, UK	73.61	151,298
France	82.29	142,412
Austria	82.54	104,218
Germany	93.48	435,879

Largest origin airports by total emissions - last 12 months



10 largest carrier by emissions ranked by highest total emissions - last 12 months

Carrier Name	Emissions per ASK (g)	Total CO2 (Tonnes)
Lufthansa	73.62	3,518,305
United Airlines	66.92	526,339
Condor Flugdienst	65.94	514,688
Eurowings	64.47	475,794
Emirates	69.21	359,131
Malta Air	61.14	333,128
TUIfly Deutschland	57.41	292,656
SunExpress	56.59	284,950
Lufthansa CityLine	102.86	273,653
Singapore Airlines	88.71	225,103

10 most efficient routes according to RDC's CARE Index - current month

Carrier Name	Aircraft	Origin	Destination	CARE Index
Wizz Air	A321neo	HAM	OTP	7.8
Wizz Air	A321neo	CGN	TIA	7.8
Wizz Air	A321neo	FMM	OTP	7.7
Wizz Air	A321neo	NUE	OTP	7.7
Wizz Air	A320neo	HAM	TIA	7.7
Wizz Air	A321neo	HHN	TIA	7.7
Wizz Air	A320neo	DTM	INI	7.6
PLAY	A320neo	BER	KEF	7.6
easyJet	A320	BER	LPA	7.6
easyJet	A320	BER	SPC	7.6

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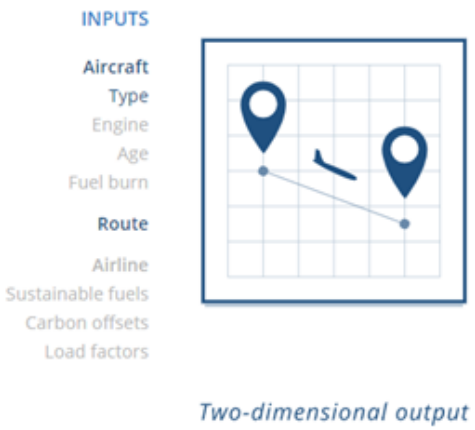
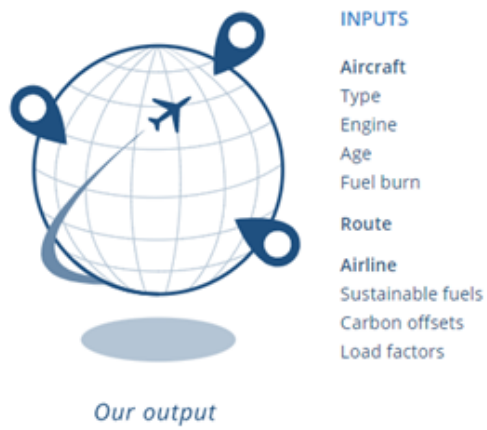
RDC is a UK-based data and technology provider to the international air transport industry. The company has over 300 clients of its **Apex** and **AirportCharges.com** products, which provide market intelligence to operators of aircraft and airports, as well as investors, OEMs and regulators.

For decades RDC have been monitoring and modelling the CO2 emissions arising from the growing aviation industry. We have the ability to calculate and report detailed airline operating expenses - including fuel burn, which in turn gives us the CO2 output from flying. For accuracy on CO2 emissions data, our accredited and independent methodology can't be beaten.

We passionately believe that business and consumers should be armed with the best information on which to make their purchasing decisions - particularly when it comes to making more environmentally friendly choices - this is why we developed our **CO2 calculator** and **CARE Index.**



Two-dimensional output



Our output

To find out more about how RDC can deliver CO2 emissions data for your business services, get in touch with:

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Global Account Director
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