RDC
rdcaviation.com

Aviation Emissions Report

March 2024

Emissions analysis for largest markets - March 24 vs prior years

25 largest markets by total emissions

Date Origin Country	March 2019 Total CO2 (Tonnes)	March 2023 Total CO2 (Tonnes)	March 2024 Total CO2 (Tonnes)
United States	15,300,918	13,908,292	14,652,766
China	7,516,914	6,645,188	7,719,725
United Kingdom, UK	2,657,574	2,235,104	2,437,527
Japan	2,326,054	1,694,976	2,076,616
United Arab Emirates	2,005,319	1,728,065	1,971,497
India	1,849,821	1,836,247	1,861,286
Australia	1,733,427	1,356,043	1,607,807
Germany	1,923,798	1,370,759	1,584,485
Spain and Canary Islands	1,462,438	1,406,394	1,578,631
France	1,506,195	1,263,975	1,352,770
Canada	1,496,317	1,246,354	1,352,102
Brazil	1,316,337	1,149,723	1,200,918
Turkey	974,735	1,064,959	1,172,717
Russian Federation	1,417,680	1,023,086	1,108,011
Mexico	1,045,311	1,069,858	1,082,501
Thailand	1,360,695	842,701	1,023,292
Republic of Korea	1,131,965	834,385	1,019,679
Singapore	1,025,227	802,070	940,761
Indonesia	1,084,239	879,710	916,673
Italy	937,112	772,414	914,432
Qatar	801,303	773,768	907,722
Saudi Arabia	726,433	779,887	829,434
Netherlands	749,690	605,486	672,398
Hong Kong	1,064,142	399,373	641,133
Chinese Taipei	581,869	413,932	558,534

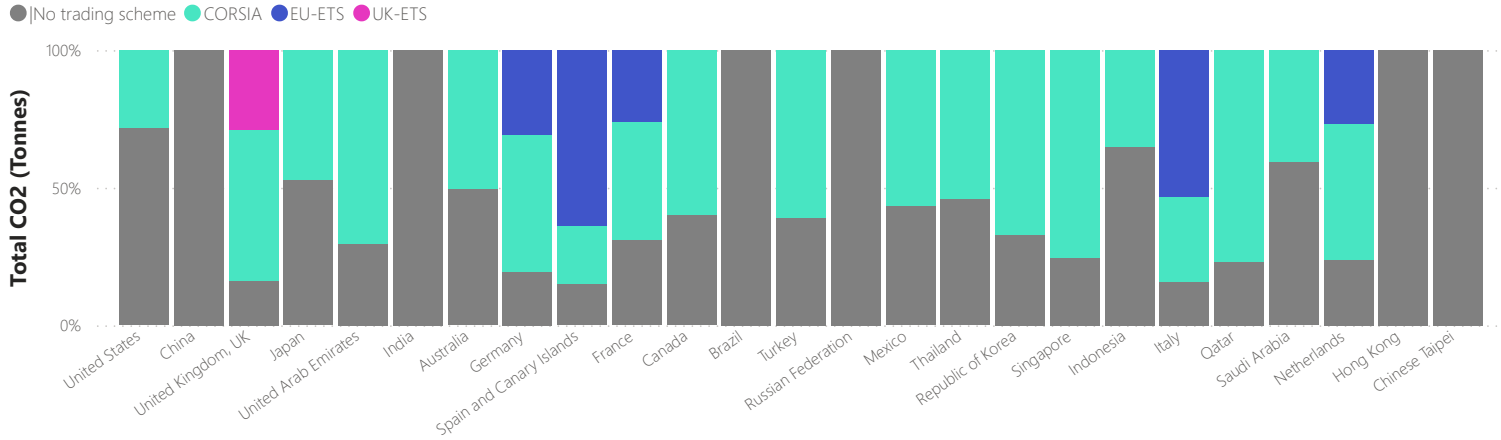
Change in Emissions - Current month vs prior years

This year vs last year	This year vs 2019
5%	-4%
16%	3%
9%	-8%
23%	-11%
14%	-2%
1%	1%
19%	-7%
16%	-18%
12%	8%
7%	-10%
8%	-10%
4%	-9%
10%	20%
8%	-22%
1%	4%
21%	-25%
22%	-10%
17%	-8%
4%	-15%
18%	-2%
17%	13%
6%	14%
11%	-10%
61%	-40%
35%	-4%

Percent of Emissions covered by Compliance Programmes

March 2019 % covered	March 2023 % covered	March 2024 % covered
-	27.04%	28.09%
-	-	-
28.50%	86.59%	83.99%
-	43.22%	47.08%
-	69.89%	70.16%
-	-	-
-	50.32%	50.28%
32.54%	84.21%	80.53%
61.91%	86.36%	84.84%
25.84%	70.60%	68.82%
-	55.53%	59.68%
-	-	-
-	60.00%	60.93%
-	-	-
-	51.00%	56.52%
-	54.61%	53.90%
-	69.61%	67.21%
-	81.21%	75.50%
-	35.31%	35.24%
51.01%	89.03%	84.19%
-	76.39%	76.74%
-	45.43%	40.42%
23.78%	78.70%	76.32%
-	-	-
-	-	-

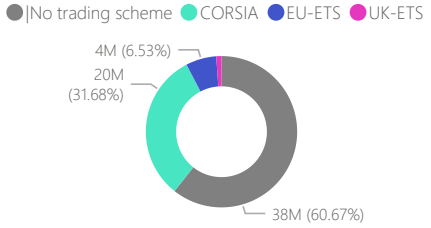
25 largest markets - emissions by Compliance Programme (current month)



Global emissions (tonnes)

63M

Emissions by compliance programme



© RDC Aviation Limited 2024

Emissions analysis for largest markets - YTD to Mar 24 vs prior years

25 largest markets by total emissions

YTD Period / Origin Country	YTD 2019 Total CO2 (Tonnes)	YTD Last Year Total CO2 (Tonnes)	YTD This Year Total CO2 (Tonnes)
United States	42,545,059	38,935,894	41,143,348
China	22,528,117	19,022,153	23,622,157
United Kingdom, UK	7,577,124	6,226,187	6,880,029
Japan	6,686,469	4,819,595	6,029,590
United Arab Emirates	5,854,134	4,992,482	5,809,464
India	5,560,818	5,305,710	5,425,583
Australia	5,240,208	3,962,258	4,893,088
Germany	5,441,439	3,819,013	4,398,554
Spain and Canary Islands	4,116,510	3,854,098	4,370,658
Canada	4,292,815	3,523,149	3,892,842
France	4,346,032	3,596,404	3,805,483
Brazil	4,057,264	3,481,767	3,666,327
Turkey	2,792,213	3,051,567	3,410,889
Russian Federation	4,108,937	2,915,825	3,237,713
Mexico	2,980,126	3,099,855	3,158,657
Republic of Korea	3,336,236	2,448,916	3,058,346
Thailand	4,024,911	2,440,040	3,050,396
Indonesia	3,236,572	2,580,245	2,843,826
Singapore	3,005,409	2,305,366	2,773,722
Qatar	2,332,534	2,245,299	2,663,954
Italy	2,657,962	2,100,301	2,507,521
Saudi Arabia	2,124,046	2,210,726	2,448,137
Netherlands	2,136,099	1,694,928	1,945,926
Hong Kong	3,149,919	1,069,489	1,901,052
Vietnam	1,662,646	1,606,504	1,706,443

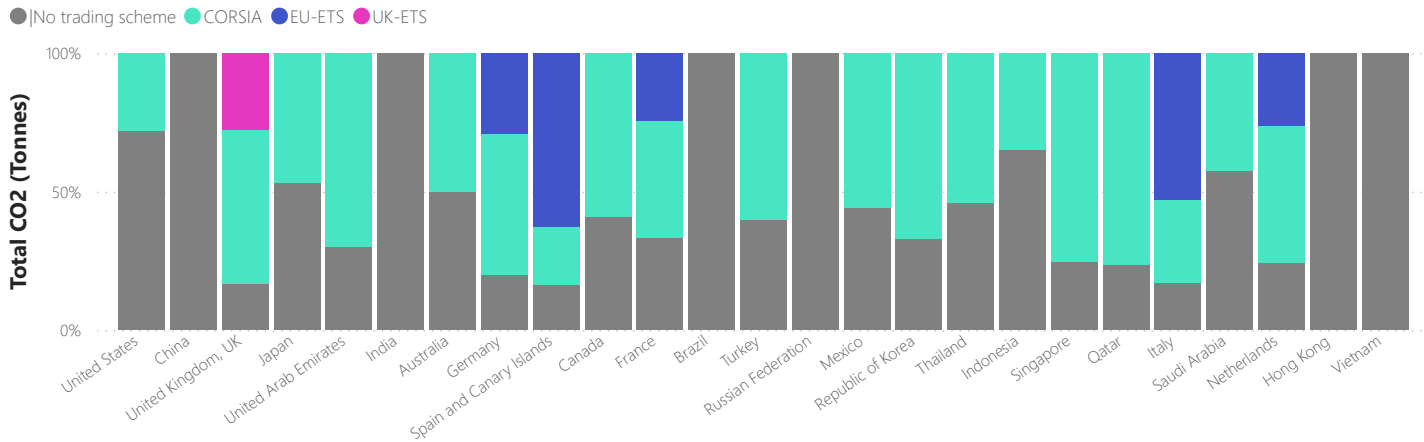
Change in Emissions - Current month vs prior years

This YTD vs Last YTD	This YTD vs YTD 2019
6%	-3%
24%	5%
11%	-9%
25%	-10%
16%	-1%
2%	-2%
23%	-7%
15%	-19%
13%	6%
10%	-9%
6%	-12%
5%	-10%
12%	22%
11%	-21%
2%	6%
25%	-8%
25%	-24%
10%	-12%
20%	-8%
19%	14%
19%	-6%
11%	15%
15%	-9%
78%	-40%
6%	3%

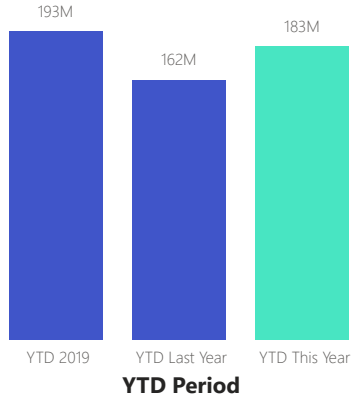
Percent of Emissions covered by Compliance Programmes

YTD 2019 Trading scheme %	YTD Last Year Trading scheme %	YTD This Year Trading scheme %
-	26.95%	28.16%
-	-	-
27.62%	86.16%	83.15%
-	42.86%	46.76%
-	70.68%	70.05%
-	-	-
-	51.03%	49.98%
32.34%	84.16%	80.07%
61.14%	85.47%	83.78%
-	55.83%	59.22%
24.84%	69.57%	66.88%
-	-	-
-	59.44%	60.14%
-	-	-
-	50.66%	55.81%
-	70.25%	66.92%
-	56.29%	54.02%
-	34.73%	34.86%
-	82.74%	75.32%
-	76.79%	76.24%
51.21%	88.86%	83.02%
-	46.39%	42.45%
23.10%	78.50%	75.86%
-	-	-
-	-	-

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



Global emissions (tonnes)



© RDC Aviation Limited 2024

RDC CARE Index by carrier and home continent - March 24

Top 25 European Carriers

Carrier Name	CARE Index
Wizz Air UK	7.7
Marabu Airlines	7.5
Smartwings Hungary	7.5
PLAY	7.5
Smartwings Slovakia	7.4
Iberojet	7.3
French Bee	7.3
Smartwings Poland	7.2
TUIfly Nordic	7.1
Norse Atlantic Airways	7.1
Sunclass Airlines	7.1
TUI Airways	7.0
La Compagnie	7.0
Jet2	6.9
Wizz Air	6.9
Norse Atlantic Airways UK	6.8
Wizz Air Malta	6.8
Buzz	6.8
Southwind Airlines	6.8
Malta Air	6.7
Enter Air	6.7
SunExpress	6.7
Freebird Airlines	6.7
TUIfly Deutschland	6.6

Top 25 North American Carriers

Carrier Name	CARE Index
Lynx Air	7.3
Flair Airlines	7.2
Volaris	7.0
Sunwing Airlines	6.8
Air Transat	6.8
Frontier Airlines	6.8
Canada Jetlines	6.4
Spirit Airlines	6.4
Porter Airlines Canada	6.3
Sun Country	6.1
WestJet	6.0
Allegiant Air	6.0
Airbahn	5.8
Alaska Airlines	5.7
Delta Air Lines	5.6
Aeromexico	5.6
VivaAerobus	5.6
Breeze Airways	5.6
American Airlines	5.5
United Airlines	5.4
Avelo Air	5.4
Air Canada	5.3
JetBlue	5.3
Air Canada Rouge	5.3

Top 25 Asian Carriers

Carrier Name	CARE Index
Thai AirAsia X	6.8
AirAsia X	6.7
ZIPAIR Tokyo	6.7
Scoot	6.6
My Freighter	6.4
STARLUX Airlines	6.4
Akasa Air	6.4
Nordwind Airlines	6.3
T'Way Air	6.3
Ural Airlines	6.2
Air Premia	6.2
airblue	6.2
NordStar Airlines	6.2
Tigerair Taiwan	6.1
Philippine Airlines	6.1
Greater Bay Airlines	6.1
Hong Kong Express	6.1
Longjiang Airlines	6.0
Air Guilin	6.0
IndiGo	6.0
Suparna Airlines	6.0
Himalaya Airlines	6.0
Fuzhou Airlines	5.9
Spring Airlines	5.9

Top 25 RoW Carriers

Carrier Name	CARE Index
Arajet	6.9
Wizz Air Abu Dhabi	6.7
Bonza Airline	6.6
Flynas	6.6
Sky Airline	6.6
flydubai	6.5
UR Airlines	6.4
Air Tahiti Nui	6.4
SalamAir	6.4
Sky Airline Peru	6.3
Airmax Cargo	6.3
El Al	6.2
Syrian Air	6.2
LATAM Paraquay	6.1
Arkia Israel Airlines	6.1
Jazeera Airways	6.0
Copa Airlines	5.9
FlyEgypt	5.9
Jetstar Airways	5.9
JetSmart Airlines S.A.	5.9
Medsky Airways	5.9
Aircalin	5.9
Nouvelair Tunisie	5.8
Air Arabia	5.8

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:

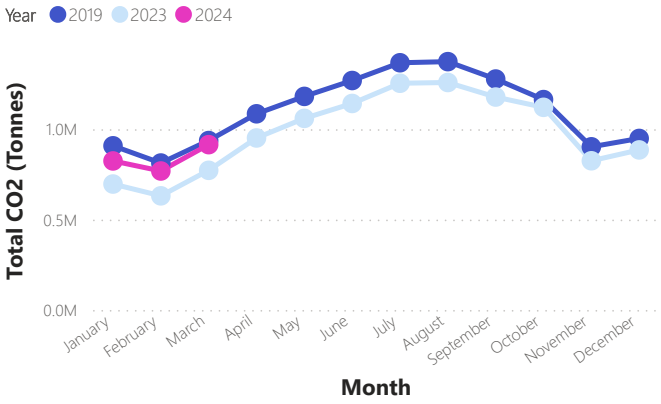
- fuel burn and efficiency of the aircraft type
- efficiency of the airline – using specific seat capacity, configuration and overall occupancy rates (load factor)
- use of Sustainable Alternative Fuels (SAF)
- if the route is part of a compliance or regulatory emissions programme such as EU ETS etc
- 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.

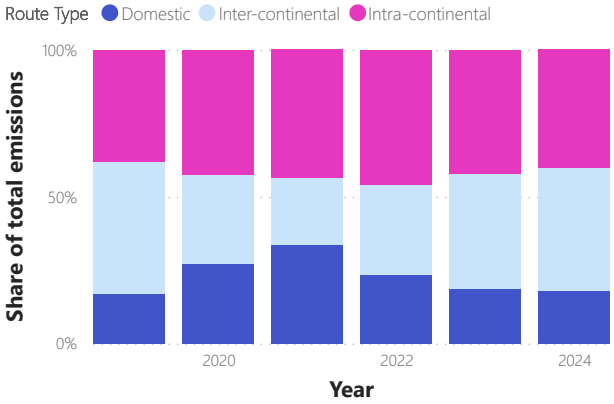
© RDC Aviation Limited 2024

This month's focus country: Italy

Total CO2 (Tonnes) by Month and Year



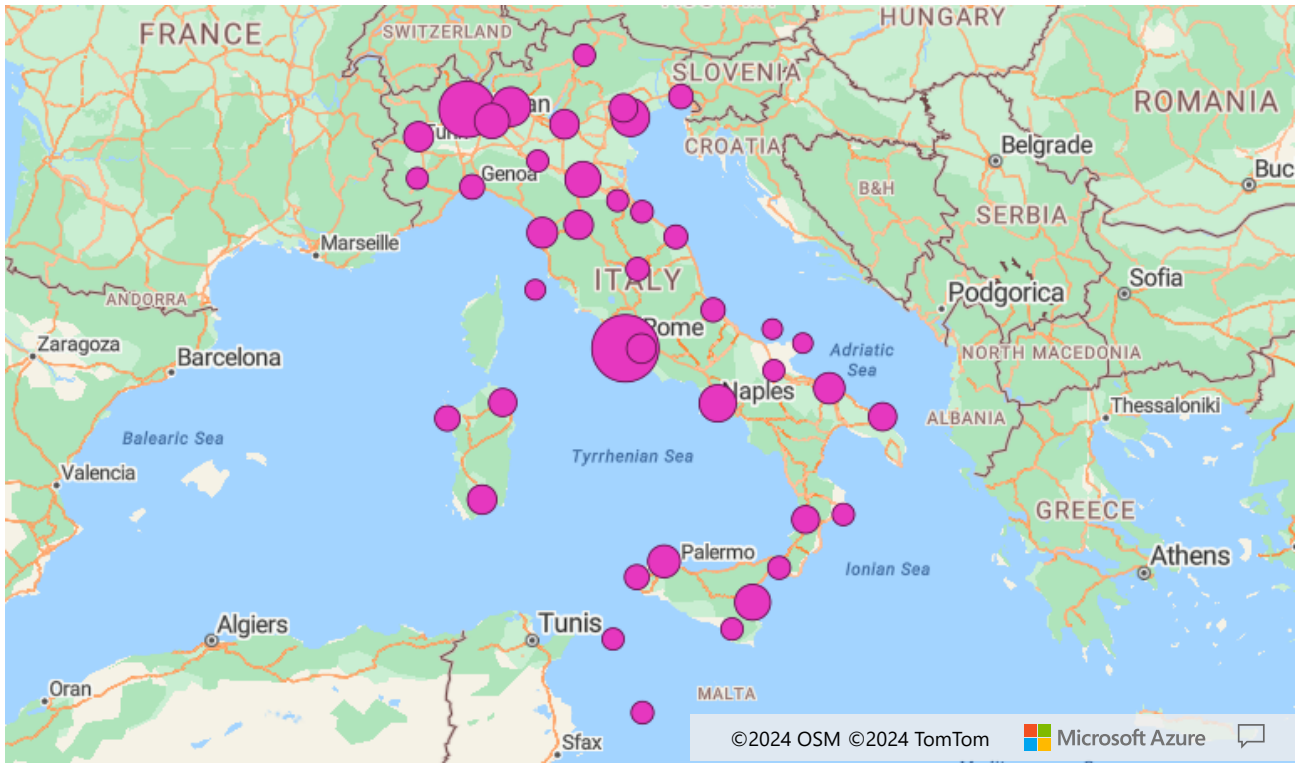
CO2 by Year and Route Type



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

Destination Country	Emissions per ASK (g)	Total CO2 (Tonnes)
Romania	59.72	150,142
Greece	60.93	187,052
Spain and Canary Islands	62.43	707,874
United Kingdom, UK	62.65	609,512
Albania	68.33	114,873
France	69.12	418,549
Netherlands	69.68	179,739
United States	69.94	1,416,797
Germany	74.30	400,594
Italy	74.35	1,800,035

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)
Malta Air	64.85	1,630,555
ITA Airways	67.96	1,298,382
easyJet	68.74	697,016
Wizz Air Malta	51.65	501,612
Ryanair	61.14	441,783
Delta Air Lines	71.91	367,699
Emirates	76.59	353,846
United Airlines	81.90	312,234
Neos	65.34	253,483
American Airlines	73.28	237,614

Emissions by airport - last 12 months

Origin Name	Total CO2 (Tonnes)	Emissions per ASK (g)
Rome - Fiumicino Airport	3,497,939	66.03
Milan - Malpensa Airport	2,065,765	66.88
Milan - Orio Al Serio Airport	578,219	61.00
Venice - Marco Polo Airport	514,401	69.14
Naples Airport	454,836	65.65
Catania - Fontanarossa Airport	389,677	64.40
Bologna - Guglielmo Marconi Airport	382,524	66.39
Milan - Linate Airport	346,423	75.71
Palermo - Punta Raisi Airport	240,885	69.23
Bari - Palese Airport	192,720	68.76
Pisa - Galileo Galilei Airport	174,310	64.23

© RDC Aviation Limited 2024

RDC
rdcaviation.com

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 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 CO_2 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 CO_2 output from flying. For accuracy on CO_2 emissions data, our accredited and independent methodology can't be beaten.

To find out more about how RDC can deliver CO_2 emissions data for your business services, get in touch at rdcaviation.com/contact

Confidentiality
This document and any analysis, opinions, results, evaluations or recommendations herein or accompanying it (the "Report") and its contents are confidential.

Limitations
This document and any analysis, opinions, results, evaluations or recommendations herein or accompanying it (together, the "Report"), was prepared by RDC Aviation Limited (RDC) for the personal use of the recipient. Any statements made in the Report that are not historical fact are based on data and information provided by others or calculated by RDC. RDC has not verified the accuracy of any such data and information unless otherwise specified by RDC in writing. This document may contain forward-looking statements regarding future events including, but not limited to 'forecast', 'expect', 'believe', 'estimate', 'anticipate', 'will', 'could', 'may' or 'might' and the negative of such terms or similar expressions.
By their nature, forward looking statements involve risks and uncertainties, because they relate to events and depend on circumstances that may or may not occur in the future and that are beyond the control of RDC. Forward-looking statements are not guarantees of future performance. In particular no allowance has been made for changes in government policy or regulation; economic performance; price; taxation; company failure; strategic change; ownership change; or other external factors that could cause actual results to differ materially from those shown in the Report. The information contained in the Report was produced on the date of issue and is based on the conditions encountered and information available at that time. RDC make no representations, warranties or guarantees, whether express or implied, in relation to the base data, forecasts, estimates and any projected outcomes in the Report.
Unless otherwise specified in writing, no reliance may be placed on this Report.

Copyright
All rights reserved. No part of this work may be reproduced, stored in a retrieval system of any nature, or transmitted, in any form or by any means including photocopying and recording, without the prior written permission of RDC, the copyright owner. If any unauthorised acts are carried out in relation to this copyright work, a civil claim for damages may be made and/or a criminal prosecution may result. ©2023/24 RDC Aviation Ltd

VISIT RDCAVIATION.COM