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atmosfair Airline Index 2014

How is the Airline Index used?

1. Avoidance

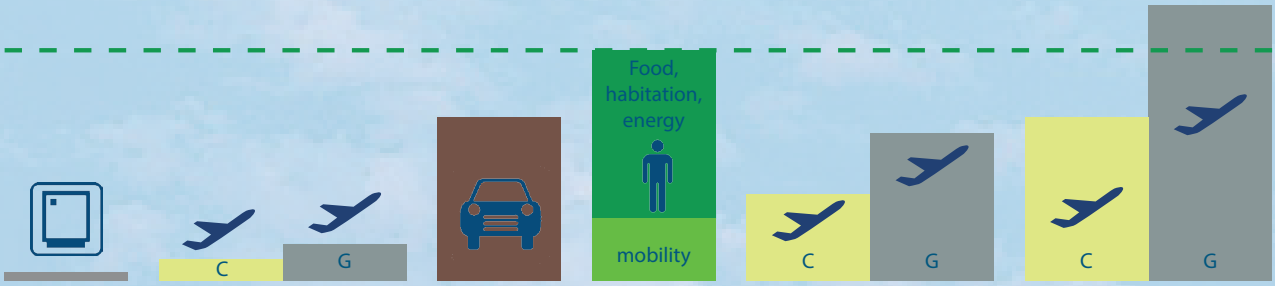
- Even efficient flights can quickly exceed a single person's annually climate CO_2 budget (see graphic). Are there alternatives available like the train?
- Have I chosen the direct flight? (Rule of thumb: a direct flight in Efficiency Class E is better for the climate than a transfer flight in Class C)

2. Optimization

- The airline index shows you the efficiency points of an airline broken down by short, medium and long distance flights. First, ascertain your flight distance and then, in the appropriate distance class, the most efficient airline.
- The airline with the most efficiency points will generally also be the most efficient on your flight from point A to point B. Since deviations are possible, atmosfair offers companies with much flights a detailed ranking of airlines on specific city pairs, which are important for the company.

3. Compensation

- atmosfair can offset the CO_2 quantity that you generate with your flight by building up and expanding the generation of renewable energies. Make your contribution to fighting global warming online with the multiple test winner www.atmosfair.de



Climate impact*:	100 kg CO_2	210 kg CO_2	360 kg CO_2	1.600 kg CO_2	2.300 kg CO_2	850 kg CO_2	1.450 kg CO_2	1.600 kg CO_2	2.600 kg CO_2
	1 year operation of a fridge	1 passenger Distance 700 km (e.g. Düsseldorf - Mailand) Return flight		1 year car usage	Personal climate budget**	1 passenger Distance 3.300 km (e.g. Frankfurt - Teneriffa) Return flight		1 passenger Distance 6.550 km (e.g. München - New York) Return flight	

* Aircraft exhaust gases contain additional pollutants besides CO_2. Those other pollutants are converted to CO_2 equivalent omissions using the absolute global warming potential (AGWP) approach, with medium values and a 100 year time horizon. The AGWPs do not enter into the ranking of the airlines, since they are the same for all airlines. * Aircraft exhaust gases contain additional pollutants besides CO_2. Those other

** That is the amount of CO_2 that one human being can generate annually if global warming is to stay below the 2°C mark, provided the resulting world CO_2 budget were equally distributed among all humans. Transport accounts for about one quarter of current global CO_2 emissions.

References

Prof. Dr. Hartmut Graßl:

"With the airline index, atmosfair has built a bridge from science to practical climate protection in the important area of air transport."

Associate Prof. Paul Peeters, NHTV Breda University, Flugzeugingenieur:

"The AAI calculation method is precise and sets the standard for the environmental evaluation of aircraft and airlines."

Prof. Dr. Stefan Gössling, Lund University:

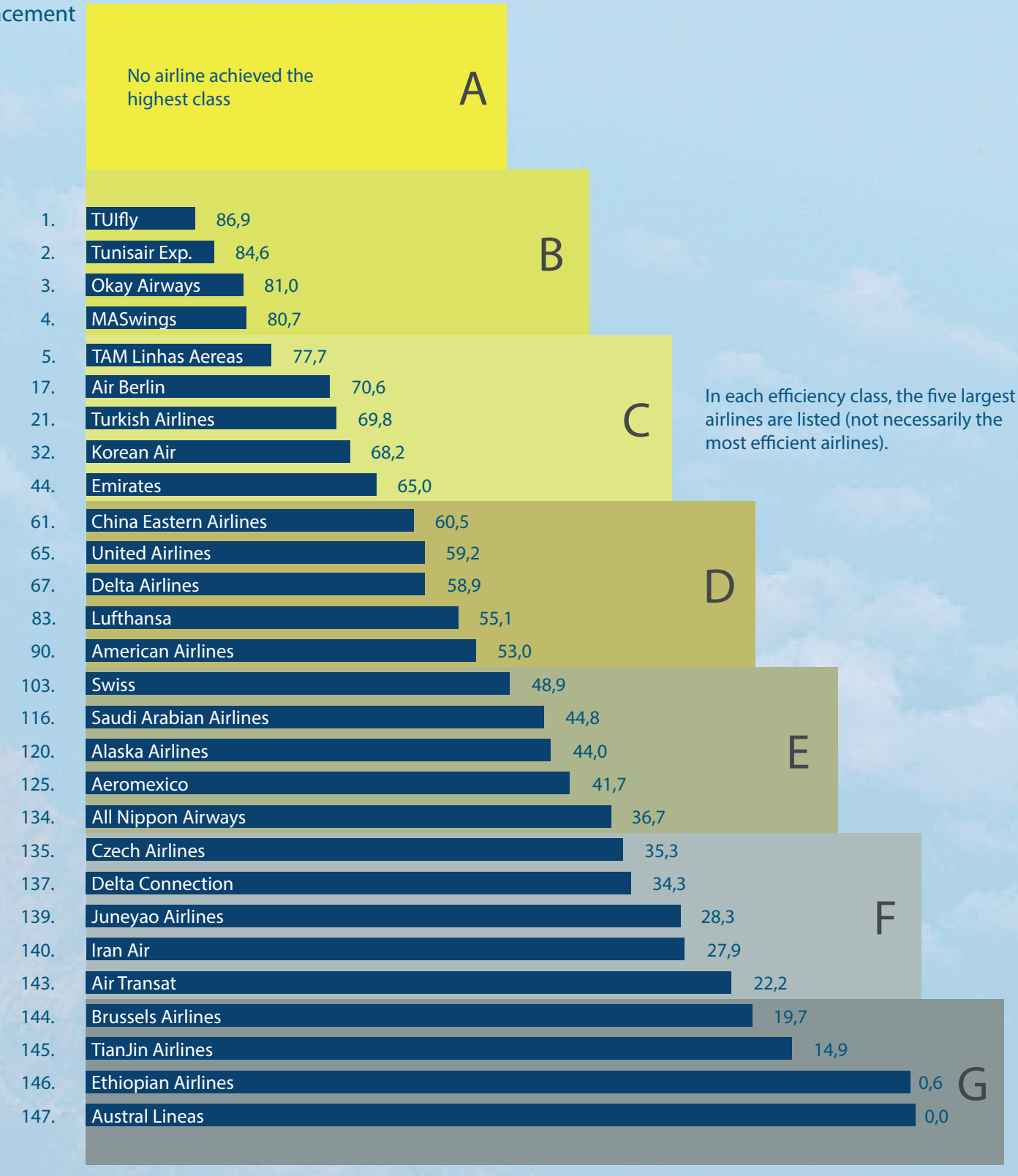
"The challenge of comparing airlines from a climate policy viewpoint has been convincingly scientifically solved by atmosfair."

For corporates

The atmosfair airline ranking is available in detail even for single selected air routes. Because climate efficiency reduces fuel consumption, we can recommend airlines on the routes that are important to you, with which you can save both money and CO_2.

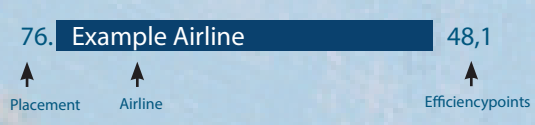
Ask us; we'll be happy to help you: airlineindex@atmosfair.de

AAI 2014 Evaluation of short haul flights (up to 800 km)



In each efficiency class, the five largest airlines are listed (not necessarily the most efficient airlines).

Legend

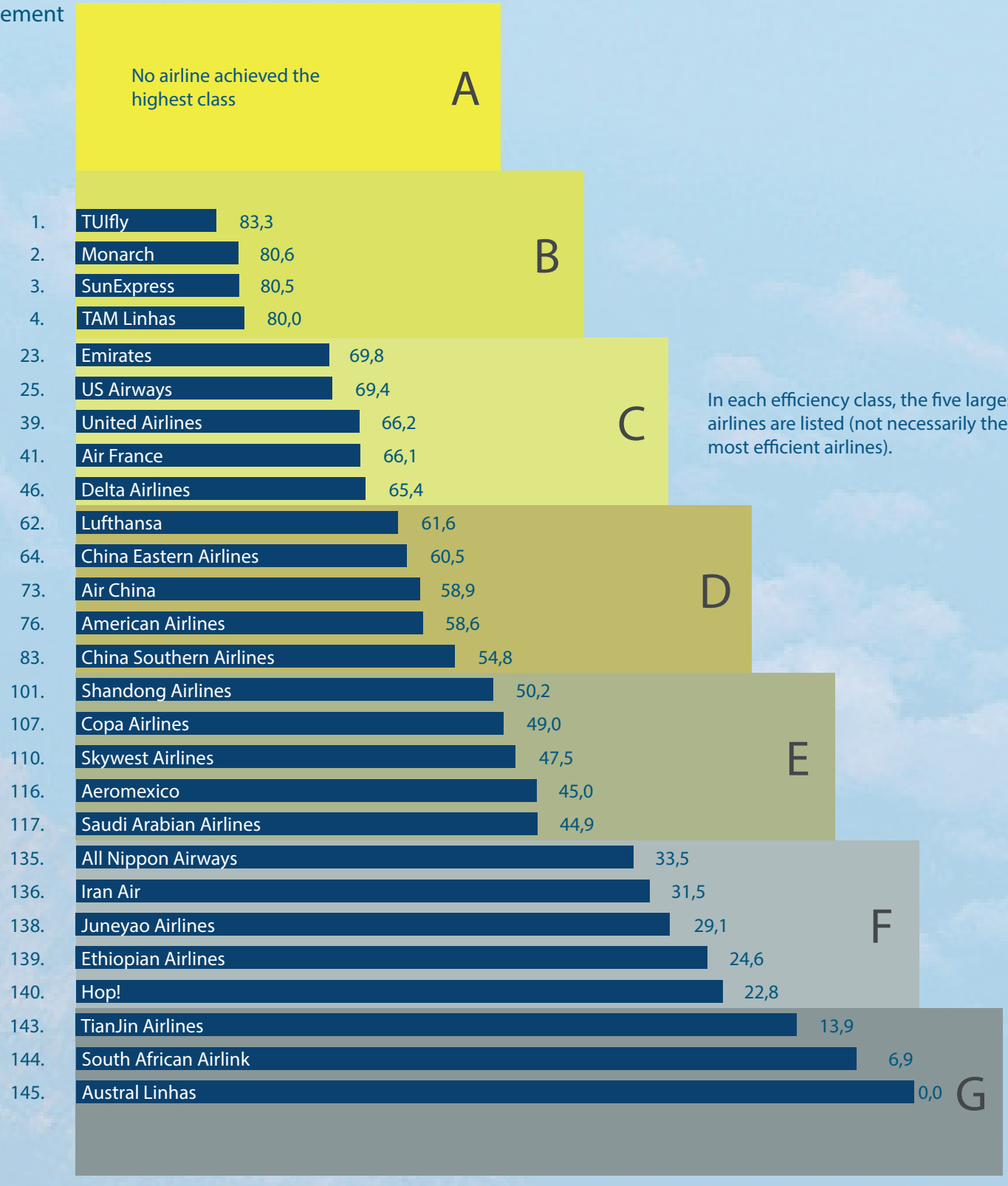


2012 data

Accuracy of all airlines: ± 1,5 efficiency points

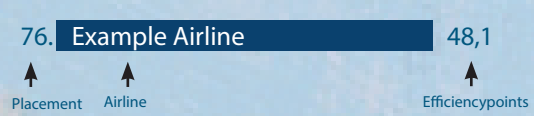
[1]see footnote p. 6

AAI 2014 Evaluation of medium haul flights (from 800 km up to 3.800 km)



In each efficiency class, the five largest airlines are listed (not necessarily the most efficient airlines).

Legend

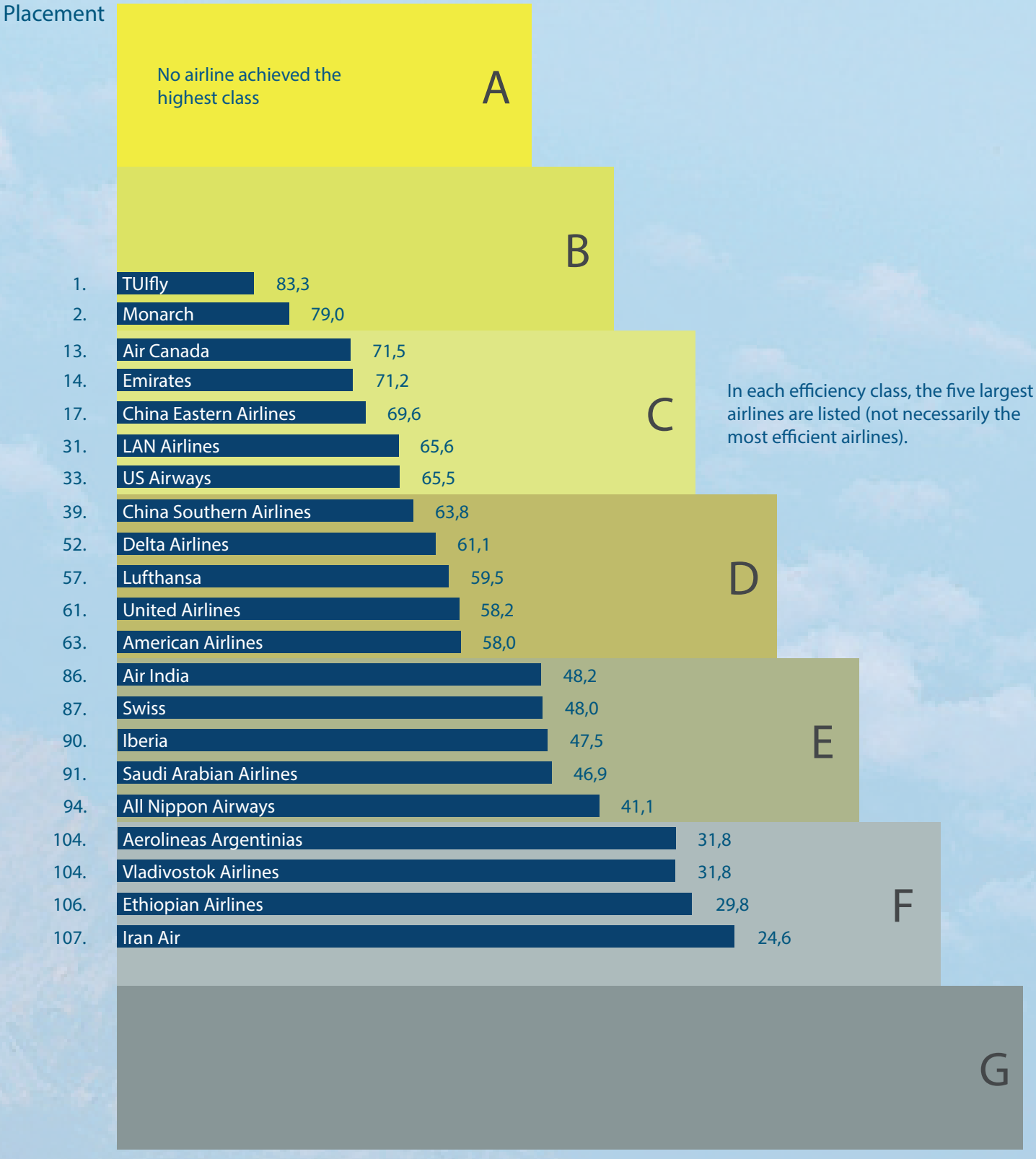


2012 data

Accuracy of all airlines: ± 1,5 efficiency points

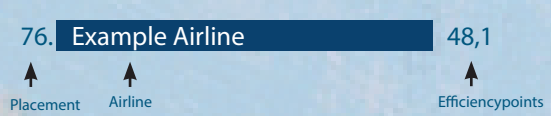
[1] see footnote p. 6

AAI 2014 Evaluation of long haul flights (more than 3.800 km)



In each efficiency class, the five largest airlines are listed (not necessarily the most efficient airlines).

Legend



2012 data

Accuracy of all airlines: ± 1,5 efficiency points

Complete Ranking (1)

Overall ranking								Distance-bases ranking								
								<800 km			800-3800 km			>3800 km		
Rank	Airline	Country	EP* '13	EP* '12	EK*	Type*	Pax (in Mio.)*	EP*	EK*	Rank	EP*	EK*	Rank	EP*	EK*	Rank
1	Tunisair Express	Tunisia	84,6	83,8	B	Regional	0,1	84,6	B	2						
2	TUIfly	Germany	83,3	83,7	B	Charter	4,8	86,9	B	1	83,3	B	1	83,3	B	1
3	MASwings	Malaysia	80,7	79,1	B	Regional	2,0	80,7	B	4						
4	Monarch Airlines	UK	80,5	82,5	B	Charter	6,3				80,6	B	2	79,0	B	2
4	SunExpress	Turkey	80,5	-	B	Charter	6,4				80,5	B	3			
6	Okay Airways	China	78,2	-	B	NetCarrier	2,3	81,0	B	3	77,9	C	5			
7	Air Transat	Canada	76,3	72,8	C	NetCarrier	3,9	22,2	F	143	75,3	C	8	77,2	C	4
8	TAM Linhas Aereas	Brazil	75,1	77,0	C	NetCarrier	37,8	77,7	C	5	80,0	B	4	59,8	D	53
9	Air New Zealand Link	New Zealand	74,6	74,8	C	Regional	3,0	75,1	C	10	64,2	D	52			
10	Pegasus Airlines	Turkey	74,3	70,2	C	Charter	13,1	75,4	C	8	73,9	C	11	71,8	C	10
11	Meridiana fly	Italy	73,6	61,6	C	NetCarrier	3,2	74,2	C	11	73,3	C	12	72,0	C	9
12	KLM-Royal Dutch Airlines	Netherlands	73,1	67,7	C	NetCarrier	25,8	63,6	D	47	64,8	D	48	77,5	C	3
13	Onur Air	Turkey	72,9	73,7	C	Charter	4,3	73,0	C	15	72,8	C	14			
14	Japan Airlines	Japan	72,8	66,8	C	NetCarrier	23,9	72,6	C	16	72,4	C	15	73,3	C	7
14	Thomson Airways	UK	72,8	76,9	C	Charter	10,7	77,2	C	6	74,6	C	10	68,9	C	21
16	Srilankan Airlines	Sri Lanka	71,8	65,9	C	NetCarrier	4,3	70,2	C	19	71,4	C	17	72,5	C	8
17	Air Berlin	Germany	71,5	73,5	C	NetCarrier	33,3	70,6	C	17	75,2	C	9	59,0	D	59
18	China United Airlines	China	71,4	-	C	NetCarrier	3,2	73,4	C	14	70,8	C	20			
19	Emirates	VAE	70,8	68,1	C	NetCarrier	39,4	65.0	C	44	69,8	C	23	71,2	C	14
20	Alaska Airlines	USA	70,7	68,1	C	NetCarrier	18,5	44,0	E	120	69,9	C	21	74,3	C	5
21	Jet Airways (India)	India	70,5	70,2	C	NetCarrier	16,9	76,5	C	7	73,2	C	13	62,6	D	45
22	Condor Flugdienst	Germany	70,4	78,1	C	Charter	6,6	46,5	E	114	76,3	C	7	63,3	D	40
23	Aegean Airlines	Greece	69,7	67,5	C	Regional	6,1	68,9	C	28	69,9	C	21			
24	EVA Airways	Taiwan	69,6	71,5	C	NetCarrier	7,5	67,8	C	33	70,9	C	19	68,7	C	23
25	Corsair	France	69,3	65,6	C	Charter	1,2	67,4	C	36	66,8	C	36	69,3	C	20
25	Thai Airways International	Thailand	69,3	62,8	C	NetCarrier	20,6	51,9	D	97	71,0	C	18	70,4	C	15
27	S7 Airlines	Russia	69,1	66,8	C	NetCarrier	6,4	70,3	C	18	68,8	C	26	70,2	C	16
28	XL Airways France	France	69,0	71,7	C	Charter	1,1	75,3	C	9	77,8	C	6	67,4	C	26
29	Air Italy	Italy	68,8	69,5	C	NetCarrier	0,8	60,0	D	63	60,3	D	66	74,2	C	6
29	Corendon Airlines	Turkey	68,8	-	C	NetCarrier	1,2	69,8	C	21	68,6	C	29	71,7	C	12
31	Avianca	Colombia	68,4	60,4	C	NetCarrier	23,1	67,2	C	37	68,7	C	27	69,4	C	18
31	Beijing Capital Airlines	China	68,4	69,5	C	NetCarrier	5,1	68,5	C	29	68,4	C	31			
33	Vietnam Airlines	Vietnam	68,3	67,0	C	NetCarrier	14,0	73,6	C	13	66,1	C	41	68,8	C	22
34	Icelandair	Island	67,9	66,4	C	NetCarrier	2,0	47,3	E	112	67,4	C	34	68,5	C	24
35	US Airways[1]	USA	67,8	62,6	C	NetCarrier	54,3	60,5	D	61	69,4	C	25	65,5	C	33
36	Aeroflot Russian Airlines	Russia	67,4	67,9	C	NetCarrier	17,7	66,2	C	39	68,0	C	32	66,3	C	28
37	Horizon Air	USA	67,2	-	C	Regional	7,0	69,3	C	26	64,6	D	50			
38	Turkish Airlines	Turkey	66,9	65,1	C	NetCarrier	39,0	69,8	C	21	68,5	C	30	62,1	D	47
39	Air Europa	Spain	66,7	65,9	C	NetCarrier	8,1	61,2	D	57	67,3	C	35	67,3	C	27
40	Shenzhen Airlines	China	66,2	63,9	C	NetCarrier	21,5	68,5	C	29	66,0	C	43			
41	Qatar Airways	Qatar	65,7	63,1	C	NetCarrier	17,5	65,5	C	42	66,0	C	43	65,6	C	31
41	Sichuan Airlines	China	65,7	66,8	C	NetCarrier	13,4	62,5	D	52	66,2	C	39	57,0	D	68
43	Air Mauritius	Mauritius	65,4	66,8	C	NetCarrier	1,3	73,9	C	12	57,8	D	78	65,7	C	30
44	Asiana Airlines	South Korea	65,1	67,1	C	NetCarrier	15,5	67,1	C	38	66,5	C	37	62,9	D	43
45	Garuda Indonesia	Indonesia	64,7	59,4	D	NetCarrier	17,6	69,5	C	25	66,3	C	38	58,2	D	61
45	SilkAir	Singapore	64,7	63,2	D	NetCarrier	3,3				64,7	D	49			
47	Air France	France	64,2	68,5	D	NetCarrier	50,6	62,4	D	53	66,1	C	41	63,9	D	38
48	Austrian Airlines	Austria	63,5	53,2	D	NetCarrier	11,5	62,9	D	50	63,2	D	55	64,3	D	36
48	Ural Airlines	Russia	63,5	64,0	D	NetCarrier	3,5	63,9	D	46	63,5	D	54	63,3	D	40
50	Delta Airlines	USA	63,4	63,3	D	NetCarrier	164,6	58,9	D	67	65,4	C	46	61,1	D	52
50	TAP Portugal	Portugal	63,4	63,5	D	NetCarrier	10,2	53,0	D	90	61,9	D	59	65,9	C	29
52	Hawaiian Airlines	USA	63,1	65,1	D	NetCarrier	9,5	69,8	C	21				61,7	D	48
53	Air Canada	Canada	62,9	62,2	D	NetCarrier	34,9	51,0	D	99	58,8	D	74	71,5	C	13
54	Korean Air	South Korea	62,8	57,6	D	NetCarrier	24,6	68,2	C	32	67,7	C	33	59,6	D	56
55	Cathay Pacific Airways	Hong Kong	62,7	70,6	D	NetCarrier	21,1	54,8	D	84	65,8	C	45	61,2	D	51
55	Lan Airlines	Chile	62,7	61,0	D	NetCarrier	26,0	59,5	D	64	61,8	D	61	65,6	C	31
57	Alitalia	Italy	62,6	68,2	D	NetCarrier	24,3	60,6	D	60	68,7	C	27	57,1	D	67
58	Hainan Airlines	China	62,4	60,1	D	NetCarrier	15,0	65,8	C	41	62,7	D	56	57,2	D	66
58	Singapore Airlines	Singapore	62,4	62,8	D	NetCarrier	18,2	53,5	D	88	62,4	D	57	62,5	D	46
60	Etihad Airways	VAE	62,3	56,6	D	NetCarrier	10,3	58,4	D	71	64,3	D	51	61,7	D	48

* EP: Efficiency points; EK: Efficiency class; Pax: Number of passengers (data from Air Transport Intelligence, a service of ICAOData.com, IATA WATS, and other sources); Type: The division of the airlines in categories was based on Air Transport Intelligence and other sources.
The following airlines were not evaluated due to data gaps: VIM Airlines, Go Air, Jetstar Asia, Air India Express, Airasia X, Atlasjet Airlines, Jet Lite, Air Mediterranee, China West Air, Orenair, Transavia, Nasair, Air Austral, Virgin Australia Airlines, Wizz Air, Pinnacle Airlines

[1] Due to the merger of US Airways and American Airlines, US Airways will not be sustained after a transition period. In 2012, both airlines still flew independently from each other; this is why they are shown separately.

In the event of ties, airlines are listed alphabetically.

Complete ranking (2)

Overall ranking								Distance-based ranking								
								<800 km			800-3800 km			>3800 km		
Rank	Airline	Country	EP '13	EP '12	EK*	Type*	Pax (in Mio.)*	EP*	EK*	Rank	EP*	EK*	Rank	EP*	EK*	Rank
61	United Airlines[2]	USA	62,2	64,2	D	NetCarrier	93,6	59,2	D	65	66,2	C	39	58,2	D	61
62	Thomas Cook Airlines	UK	62,1	71,9	D	Charter	6,8	61,3	D	56	62,1	D	58	61,7	D	48
63	Air Caraibes	Guadeloupe	62,0	45,7	D	NetCarrier	1,2	67,7	C	34	20,1	F	142	64,3	D	36
64	Air New Zealand	New Zealand	61,8	62,9	D	NetCarrier	13,1	64,9	D	45	69,8	C	23	48,8	E	85
65	China Eastern Airlines	China	61,7	60,0	D	NetCarrier	73,1	60,5	D	61	60,5	D	64	69,6	C	17
66	China Airlines	Taiwan	61,2	67,1	D	NetCarrier	11,4	67,6	C	35	65,3	C	47	55,8	D	71
67	Tunisair	Tunisien	60,6	62,3	D	NetCarrier	3,8	62,9	D	50	60,2	D	69	64,6	D	35
68	Iberia	Spain	60,3	60,2	D	NetCarrier	14,8	69,1	C	27	71,8	C	16	47,5	E	90
69	Transaero Airlines	Russia	60,1	58,1	D	NetCarrier	10,3	51,8	D	98	57,9	D	77	62,9	D	43
70	Air China	China	60,0	61,1	D	NetCarrier	49,3	58,9	D	67	58,9	D	73	64,8	D	34
71	Iran Aseman Airlines	Iran	59,5	57,2	D	Regional	4,1	66	C	40	54,3	D	89			
72	Lufthansa	Germany	59,4	59,0	D	NetCarrier	74,7	55,1	D	83	61,6	D	62	59,5	D	57
72	Royal Air Maroc	Marocco	59,4	58,9	D	NetCarrier	5,8	70,1	C	20	64,2	D	52	56,7	D	69
74	El Al Israel Airlines	Israel	58,9	64,6	D	NetCarrier	4,2	63,5	D	48	58,7	D	75	59,0	D	59
75	Qantas Airways	Australia	58,8	59,7	D	NetCarrier	22,8	69,7	C	24	60,3	D	66	55,6	D	74
76	American Airlines[1]	USA	58,2	56,8	D	NetCarrier	86,3	53,0	D	90	58,6	D	76	58,0	D	63
77	Iberia Regional Air Nostrum	Spain	58,0	55,9	D	Regional	4,5	60,9	D	58	53,5	D	91			
77	SAS Scandinavian Airlines	Sweden	58,0	56,8	D	NetCarrier	25,5	56,0	D	79	61,1	D	63	52,6	D	78
79	Uzbekistan Airways	Usbekistan	57,9	56,8	D	NetCarrier	2,6	60,8	D	59	60,4	D	65	50,3	E	81
80	British Airways	UK	57,6	55,1	D	NetCarrier	37,6	57,3	D	73	61,9	D	59	55,7	D	73
81	Philippine Airlines	Philippines	57,5	63,2	D	NetCarrier	8,1	63,0	D	49	60,3	D	66	49,9	E	82
82	Finnair	Finnland	56,8	57,7	D	NetCarrier	8,8	57,2	D	74	59,1	D	71	53,8	D	75
82	QantasLink	Australia	56,8	65,0	D	Regional	5,0	58,7	D	69	54,6	D	85			
84	ANA Wings	Japan	56,7	32,2	D	Regional	1,5	56,7	D	78						
85	Dragonair	Hong Kong	56,6	67,2	D	NetCarrier	7,8	54,2	D	85	57,4	D	79	46,3	E	92
86	Kenya Airways	Kenya	56,2	51,2	D	NetCarrier	3,7	48,3	E	106	50,6	E	99	63,1	D	42
86	TRIP Linhas Aereas	Brazil	56,2	-	D	Regional	0,1	65,2	C	43	41,9	E	123			
88	Rossiya Airlines	Russia	56,1	61,5	D	NetCarrier	4,2	55,2	D	82	56,2	D	80	59,4	D	58
89	Air Tahiti Nui	Fr. Polynesia	55,9	68,6	D	NetCarrier	0,4							55,9	D	70
90	China Southern Airlines	China	55,7	58,3	D	NetCarrier	64,5	55,3	D	81	54,8	D	83	63,8	D	39
90	Yakutia	Russia	55,7	-	D	NetCarrier	1,1				54,6	D	85	57,7	D	64
92	South African Express	South Africa	54,7	53,9	D	Regional	1,0	61,7	D	55	49,4	E	104			
93	Xiamen Airlines Company	China	54,4	58,5	D	NetCarrier	16,8	56,8	D	77	53,9	D	90			
94	Biman Bangladesh Airlines	Bangladesh	54,3	47,6	D	NetCarrier	1,8	48,3	E	106	59,4	D	70	52,5	D	79
95	Middle East Airlines	Lebanon	54,2	-	D	NetCarrier	2,1	53,3	D	89	54,5	D	87	47,6	E	89
96	Gulf Air	Bahrain	54,1	52,2	D	NetCarrier	5,3	47,5	E	111	50,7	E	98	59,8	D	53
97	Shuttle America	USA	53,8	45,7	D	Regional	5,8	53,8	D	87						
98	Air India Regional	India	53,0	-	D	Regional	0,5	68,4	C	31	35,5	F	132			
98	Royal Brunei Airlines	Brunei	53,0	51,6	D	NetCarrier	1,0	52,2	D	93	55,4	D	82	51,7	D	80
98	Skywest Airlines	Australia	53,0	52,5	D	Regional	26,2	58,7	D	69	47,5	E	110			
101	Air India	India	52,1	49,0	D	NetCarrier	13,8	52,1	D	95	54,4	D	88	48,2	E	86
102	bmi british midland	UK	52,0	49,5	D	NetCarrier	1,6	47,6	E	110	50,0	E	103	59,7	D	55
103	Shandong Airlines	China	51,2	56,6	D	NetCarrier	10,4	54,1	D	86	50,2	E	101			
104	Air Baltic Corporation	Latvia	51,1	-	D	NetCarrier	3,1	43,9	E	121	52,7	D	92	67,9	C	25
104	Air Macau	Macao	51,1	-	D	NetCarrier	1,6	45,3	E	115	51,5	D	94			
104	Copa Airlines	Panama	51,1	58,8	D	NetCarrier	10,2	44,4	E	117	49,0	E	107	55,8	D	71
107	Air Astana	Kazakhstan	51,0	56,7	D	NetCarrier	3,2	47,9	E	108	50,5	E	100	53,4	D	76
107	LOT - Polish Airlines	Poland	51,0	53,1	D	NetCarrier	5,0	41,3	E	127	45,9	E	113	71,8	C	10
109	Air Canada Express	Canada	50,7	51,7	E	Regional	9,0	56,9	D	76	45,2	E	115			
109	Swiss	Switzerland	50,7	50,9	E	NetCarrier	15,8	48,9	E	103	56,0	D	81	48,0	E	87
111	UTair Aviation	Russia	50,6	45,2	E	NetCarrier	7,8	50,3	E	101	50,1	E	102	69,4	C	18
112	Mahan Air	Iran	50,3	54,1	E	NetCarrier	5,1	52,2	D	93	52,6	D	93	46,0	E	93
112	Ukraine Int. Airlines	Ukraine	50,3	-	E	NetCarrier	2,8	42,2	E	124	51,1	D	96	52,9	D	77
114	Oman Air	Oman	49,4	49,7	E	NetCarrier	4,4	55,9	D	80	59,0	D	72	38,0	E	101
115	Egyptair	Egypt	49,1	48,8	E	NetCarrier	8,6	49,7	E	102	49,1	E	106	49,0	E	84
116	Czech Airlines	Czechia	48,7	56,9	E	NetCarrier	2,8	35,3	F	135	54,8	D	83	41,3	E	99
117	US Airways Express	USA	48,4	-	E	Regional	20,0	50,7	E	100	45,6	E	114			
118	Aeromexico	Mexico	48,3	55,9	E	NetCarrier	14,8	41,7	E	125	45,0	E	116	57,6	D	65
119	J-Air	Japan	47,5	-	E	Regional	2,0	48,6	E	104	44,8	E	118			
119	Malaysia Airlines	Malaysia	47,5	51,8	E	NetCarrier	13,4	52,0	D	96	51,5	D	94	43,5	E	96
121	Royal Jordanian	Jordan	46,7	47,9	E	NetCarrier	3,4	36,9	E	133	47,1	E	111	48,0	E	87
122	Pakistan Int. Airlines	Pakistan	46,1	52,9	E	NetCarrier	5,3	53,0	D	90	42,2	E	122	49,8	E	83
123	Airline Tajmyr	Russia	45,4	-	E	NetCarrier	1,2	48,6	E	104	39,8	E	128			
123	Saudi Arabian Airlines	Saudi Arabia	45,4	44,4	E	NetCarrier	24,3	44,8	E	116	44,9	E	117	46,9	E	91
125	Air Algerie	Algeria	45,2	49,1	E	NetCarrier	4,1	62,0	D	54	41,0	E	125	42,3	E	98

* EP: Efficiency points; EK: Efficiency class; Pax: Number of passengers (data from Air Transport Intelligence, a service of ICAOData.com, IATA WATS, and other sources); Type: The division of the airlines in categories was based on Air Transport Intelligence and other sources. In the event of ties, airlines are listed alphabetically.

[1] Due to the merger of US Airways and American Airlines, US Airways will not be sustained after a transition period. In 2012, both airlines still flew independently from each other.

[2] Due to the merger of United and Continental, the brand Continental no longer existed; flight operations were taken over by United. In 2012, there were still flights with Continental flight number, but operated with aircrafts from United Airlines. These flights were attributed to United.

Ranking Charter Carrier

Rank	Airline	Country	Efficency class	Efficency Points 2013	Efficency Points 2012	Efficency Points 2011	Type	Pax (in Mio.)
1	TUIfly	Deutchland	B	83,3	83,7	81	Charter	4,8
2	SunExpress	Turkey	B	80,5	-	-	Charter	6,4
2	Monarch Airlines	UK	B	80,5	82,5	81,1	Charter	6,3
4	Pegasus Airlines	Turkey	C	74,3	70,2	71,1	Charter	13,1
5	Onur Air	Turkey	C	72,9	-	-	Charter	4,3
6	Thomson Airways	United Kingdom	C	72,8	76,9	74	Charter	10,7
7	Condor Flugdienst	Deutchland	C	70,4	78,1	78,1	Charter	6,6
8	Corsair	France	C	69,3	65,6	-	Charter	1,2
9	XL Airways France	France	C	69,0	-	-	Charter	1,1
10	Thomas Cook Airlines	UK	D	62,1	71,9	72,5	Charter	6,8

Ranking Regional Carrier

Rank	Airline	Country	Efficency class	Efficency Points 2013	Efficency Points 2012	Efficency Points 2011	Type	Pax (in Mio.)
1	Tunisair Express	Tunisien	B	84,6	83,8	-	Regional	0,1
2	MASwings	Malaysia	B	80,7	79,1	76,0	Regional	2,0
3	Air New Zealand Link	New Zealand	C	74,6	74,8	74,3	Regional	3,0
4	Aegean Airlines	Greece	C	69,7	67,5	-	Regional	6,1
5	Horizon Air	USA	C	67,2	-	-	Regional	7,0
6	Iran Aseman Airlines	Iran	D	59,5	-	-	Regional	4,1
7	Iberia Regional Air Nostrum	Spain	D	58,0	55,9	81,0	Regional	4,5
8	QantasLink	Australia	D	56,8	65	48,1	Regional	5,0
9	ANA Wings	Japan	D	56,7	32,2	75,5	Regional	1,5
10	TRIP Linhas Aereas	Brazil	D	56,2	-	-	Regional	0,1
11	South African Express	South Africa	D	54,7	53,9	-	Regional	1,0
12	Shuttle America	USA	D	53,8	45,7	-	Regional	5,8
13	Skywest Airlines	Australia	D	53,0	52,5	49,0	Regional	26,2
13	Air India Regional	India	D	53,0	-	-	Regional	0,5
15	Air Canada Express	Canada	E	50,7	51,7	-	Regional	9,0
16	US Airways Express	USA	E	48,4	-	-	Regional	20,0
17	J-Air	Japan	E	47,5	-	-	Regional	2,0
18	Lufthansa Regional	Germany	E	44,2	48,7	47,6	Regional	11,0
19	BA CityFlyer	UK	E	43,8	46,5	41,6	Regional	1,1
20	GoJet Airlines	USA	E	43,1	-	-	Regional	3,5
21	Mesa Airlines (go!)	USA	E	42,6	47,7	-	Regional	7,6
22	PGA - Portugalia Airlines	Portugal	E	41,1	43,9	-	Regional	1,5
23	Austrian Arrows	Austria	E	41,0	-	-	Regional	1,0
24	Envoy[1]	USA	E	40,7	44,0	-	Regional	22,0
25	KLM Cityhopper	Netherlands	E	38,5	39,3	49,0	Regional	6,6
26	United Express	USA	E	38,3	48,2	39,8	Regional	20,0
27	Aeroméxico Connect	Mexico	E	37,8	38,3	-	Regional	5,6
28	Egyptair Express	Egypt	F	35,9	37,3	-	Regional	1,0

[1] Envoy is a label of American Airlines

Low Cost Carrier

The Low Cost or so-called budget airlines (LCC) have purposely been included in this airline index in a different kind of illustration. They have to be considered separately, since they raise methodological issues in total CO_2 calculation and representation, which renders them not-comparable to other airlines. However, at least the direct CO_2 emissions of the LCCs can be calculated. In order to not withhold this information from flight passengers, LCCs are thus represented here in a more approximate form, which balances known with unknown parameters, as discussed below.

The methodological issues include:

1. Subsidies:
Many, though not all, budget airlines receive subsidies, and hence generate flights which they could not otherwise have offered at such low prices. These subsidies thus stimulate flights and subsequently emissions of CO_2, which would need also be assigned to the climate account of the subsidized airlines, but which cannot be calculated by the Airline Index. Other airlines benefit from subsidies as well, but they do not convert those subsidies equally into cheaper fares and thus more CO_2.

2. Detours:
Many budget airlines fly to and from regional airports. However, the ground travel required to get to these airports is generally longer than in the case of hub to hub flights. These longer ground transport distances cause additional CO_2, which must be incorporated into the ranking.

Note: not all budget airlines are alike. atmosfair has assumed the definition and categorization of airlines as "Low Cost airlines" from the ATI, the service provider for the international civil air transport organization ICAO. The definition is given in the complete documentation of the methodology, which can be downloaded from the atmosfair website.

Low Cost Carrier[1]		
Efficency class	Type	Airlines
A	Low Cost Carrier	----
B	Low Cost Carrier	Aer Lingus regional, AirAsia, EasyJet, IndiGo, Lion AIr, Norwegian, Ryanair, Spring Airlines, Thai AirAsia
C	Low Cost Carrier	Aer Lingus, Cebu Pacific, Frontier Airlines, Indonesia AirAsia, Jet2.com, JetBlue Airways, Jetstar Airways, Southwest Airlines, Spirit Airlines, Virgin America, Volaris, Vueling, Westjet
D	Low Cost Carrier	Air Arabia, Allegiant Air, Azul Airlines, Interjet, SpiceJet, Sun Country Airlines, Tiger Airways, GOL Linhas
E	Low Cost Carrier	Flybe, Skymark, Webjet
F	Low Cost Carrier	----
G	Low Cost Carrier	----

[1] In alphabetical order within one efficiency class

Where do particular airlines win or lose efficiency points?

The following brief characterization1 addresses important factors which help determine the results of an airline. We will limit ourselves to the factors aircraft type, seating capacity and load factor. The last two factors yield the number of passengers carried. These factors and their weighting in the evaluation are not stipulated by the AAI, but is calculated from the physical values for these factors which actually occur for each airline.

Airlines which achieve the best results are those using modern equipment, having high seating density and high rates of passenger occupancy and load utilization. That means for one thing that those airlines with high rates of occupancy carry passengers most efficiently if they have maximum seat density. Airlines have differing priorities in optimizing their service to their customers. Atmosfair does not evaluate these priorities, but it does evaluate the CO_2 emissions associated with them.

Air Mauritius	Best African network carrier. Fleet with predominantly efficient aircrafts (e.g., A319, ATR72) with average amount of seating. Average occupancy. Receives its points on short-distance routes through frequent use of the ATR72.
TUIfly	Best charter airline worldwide. Consistently flies with efficient aircrafts (e.g., B737-800). The aircrafts have almost maximal seating and very high occupancy, and thus TUIfly received many points.
Condor	Flies with efficient aircrafts (i.a., A320, B757). These have a high seating density. Condor lost points as compared with last year due to merely average occupancy.
TAM Linhas Aereas	Best South American network carrier. Fleet with efficient aircrafts (i.a., A320, A330, B777). For the most part, the fleet has an above-average amount of seating. In conjunction with high (but slightly reduced compared to last year) occupancy, TAM once gain received many points.
Air Berlin	Fleet consistently has modern and efficient engines (A319, A320, B737-700, B737-800, A330). High seating density, but Air Berlin lost points on long-distance routes due to reduced occupancy as compared with last year.
Air Transat	Best North American network carrier. Very high seating density on all aircrafts. Around half of the fleet consists of more inefficient aircrafts (A310), and a bit more than half consists of efficient aircrafts (A330). Air Transat received more points compared to last year due to an improved fleet and higher occupancy.
Okay Airways	Best Asian carrier. The fleet predominantly consists of efficient aircrafts (e.g., B737-800). These have very high seating density. Okay Airways received its points due to this in conjunction with very high occupancy on all routes.
Emirates	Fleet with modern jets (i.a., B777, A330, A340, A380). However, these wide-body jets have less seating than average and are thus more inefficient than narrow-body jets[2] with below-average amount of seating. Received points due to occupancy that was slightly above average. This was higher as compared to last year, which led Emirates to receive correspondingly more points.
Air France	Predominantly efficient aircrafts (except for the B747-400). Short- and middle-distance fleets have an average amount of seating. Air France lost points on long-distance routes due to the use of wide-body jets, which mostly have an average amount of seating (i.a., A330, A340, B777); furthermore, Air France lost points compared to last year due to decreased occupancy on middle- and long-distance routes.
United	Mostly efficient engines (A319/A320, B757, B767, B777). Predominantly average amount of seating in the fleet, high occupancy on middle- and long-distance routes. United lost points on short-distance routes due to occupancy that was slightly below average and on long-distance routes due to the use of the B747-400. In addition, the high (but once again reduced compared to last year) occupancy on long-distance routes reduced its efficiency.
Qantas	On short-distance routes, a little less than one-third of the aircrafts that Qantas uses are more inefficient models (i.a., B737-400); on long-distance routes, more than two-thirds of the models are modern wide-body jets (i.a., A330, A380). Part of the fleet has an amount of seating that was slightly above average, and part of it has an amount that is slightly below average. Above all, Qantas lost points due to the average occupancy, especially on middle- and long-distance routes.

[1] The selection made here does not constitute any value judgment.
[2] A wide-body jet is an airliner having a fuselage wide enough to accommodate two passenger aisles. A narrow body jet can only accomodate one passenger aisle.

Lufthansa	Overall, Lufthansa`s fleet has a slightly below-average amount of seating. On short-distance routes, Lufthansa still uses around one-third less efficient aircraft models (i.a. B737-300/500), but manages to increase efficiency significantly by modernisation of the fleet and by increasing load factors as compared to the previous year. On long-distance routes, Lufthansa uses around two-thirds of modern Wide-Body jets (A340, A330, A380, B747-8I) and has further improved the fleet. However, as compared to the previous year, Lufthansa loses in total on the long-distance routes due to reduced load factors. All things considered, Lufthansa increased CO_2-efficiency slightly compared to the former year. In the global ranking, however, Lufthansa looses ranks, since competitors stepped up more in the same period.
British Airways	Approximately two-thirds of British Airways' fleet consists of efficient aircrafts (i.a., B777, B767, A320 family) and one-third of more inefficient aircrafts (i.a., B737-300, B737-500, B747-400). Below-average amount of seating. Received additional points on long-distance routes compared to last year due to improved occupancy; however, the efficiency was not as high as it could have been due to the frequent use of the B747-400.

Background: How to rank unbiasedly short vs. long haul flights

Car drivers are used to easy and absolute climate efficiency indicators: grams CO_2 per kilometer or gallons per mile. This is not the case for aircraft: Every plane has to take off und climb out to a minimum altitude, regardless of how far it goes after that. For these reasons, CO_2 emissions per passenger and kilometer will always be higher on a short distance flight than on medium-distance flights, just due to flight physics. On long haul flights specific emissions raise again, since the fuel used at the end of the flight was carried around the entire flight before without being useful.

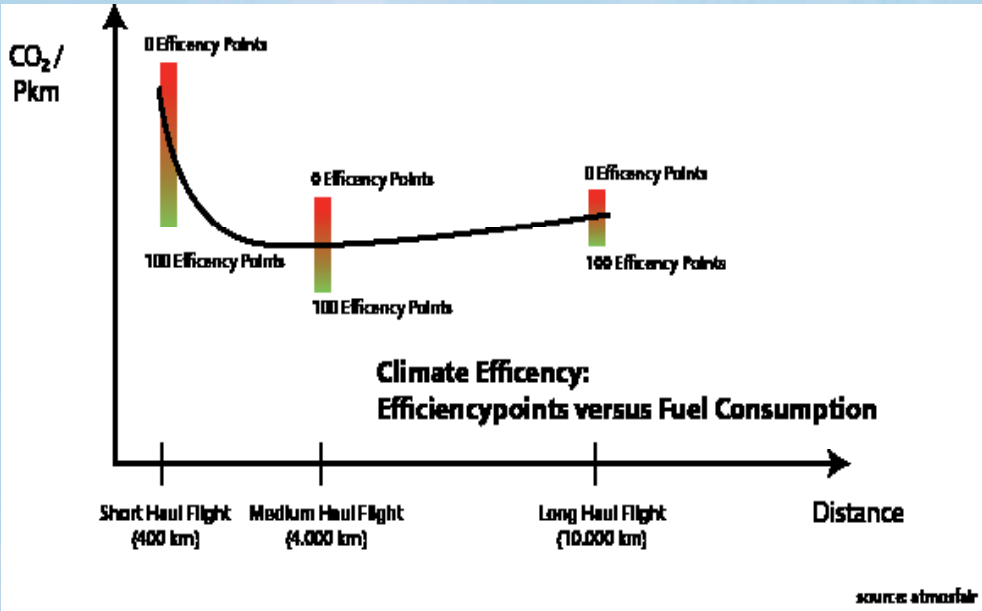


Figure 1 shows average CO_2 emissions per passenger and kilometer as a function of the flight distance (full curve). For typical short, medium and long haul distances, three bars show the range of CO_2 efficiencies of planes from the real airlines covered in the AAI. The green end of the bar marks the best CO_2 efficiency that can be achieved on this distance, red the inefficient end. The following can be seen immediately from the graph:

- A slightly inefficient medium haul flight is still more efficient than the most efficient short distance flight (green end of the short-distance bar).
- An average efficient medium distance flight is as efficient as the most efficient long haul flight.

This shows that absolute indicators such as g CO_2 per passenger kilometer do not tell much about the climate efficiency of an airline. A long haul airline with specific emissions of 120 g CO_2 per passenger kilometre may be closer to the achievable optimum than the 75 g CO_2 fleet of a medium haul airline. In this case, the long haul carrier would be discriminated by using absolute efficencies, and the potential efforts of the airline would not be appreciated adequately.

The Airline Index provides undistorted comparison: 100 efficiency points mark the the optimum already achievable today The Airline Index is thus based upon an innovative methodology, which cures this distortion: The AAI compares the CO_2 emissions of airlines on the same city pairs (e.g. Paris - London) and thus at equal distances. Only in a second step these city pair efficiency results are added up to global efficiency points for an airline.
The results are therefore based upon the technological and operative CO_2 efficiencies of airlines and renders them directly comparable. The efficiency points (EP) of the AAI express, how close an airline comes to the potential optimum result (best aircraft, best engine, maximum load factors etc.). 100 efficiency points mark this optimum, which an airline can realize today, using existing technology and employing best operations.

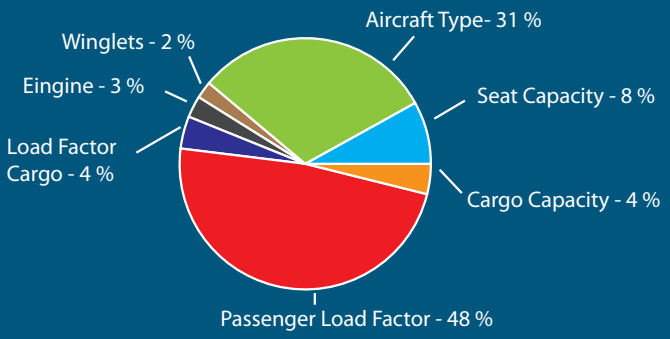
The atmosfair Airline Index method

1. Calculation of the CO_2 per net load kilometer for each flight based on i.a. aircraft type, engine, seat and cargo capacity and load factor.
2. Comparison of the CO_2 per net load kilometer with the best case flight (according to the ICAO calculation method).
3. Determination of the city pair efficiency points of an airline (best case: 100 points; others relative to that).
4. Compilation of the city pair points of each airline to generate its mean global efficiency points.
5. Ranking of the airlines by global efficiency points.

The AAI is based on the CO_2 calculation method of the ICAO. Accuracy: +1.5 efficiency points (confidence interval: 95%).

Detailed documentation of the CO_2 calculation method on www.atmosfair.de/airlineindex

Efficiency optimization: What has the greatest effect?



In order to increase CO_2 efficiency, airlines can optimize various factors. The graphic shows which factors have the greatest effect on reducing CO_2 emissions changing the factor by one standard deviation.

Highlights atmosfair Airline Index 2014

- 31,2 million flights
- 193 airlines worldwide
- 22.000 city Pairs worldwide
- 92% of global air traffic
- average efficiency gain over AAI 2013 (all airlines): 1,3% less CO_2 per passenger and kilometre
- 113 aircraft types (covering 97% of the market)
- 369 engines (covering 96% of the market)
- Respected independent data sources: ICAO, IATA, OAG, JP etc.
- 2012 data

About atmosfair

Klaus Töpfer, patron atmosfair

atmosfair is a nonprofit organization for combating climate change, founded in 2004 from a research project of the German federal Ministry for the environment. We reduce CO_2 emissions of the source, e.g. via incentive programs for video conferences instead of business trips and companies. We compensate the remaining CO_2 emissions for our clients in CDM Gold standard projects with direct utility for local people and for the climate. Our reference customers include DHL and Greenpeace.

Since 2005 atmosfair performed best in international comperative studies:

(Selection)