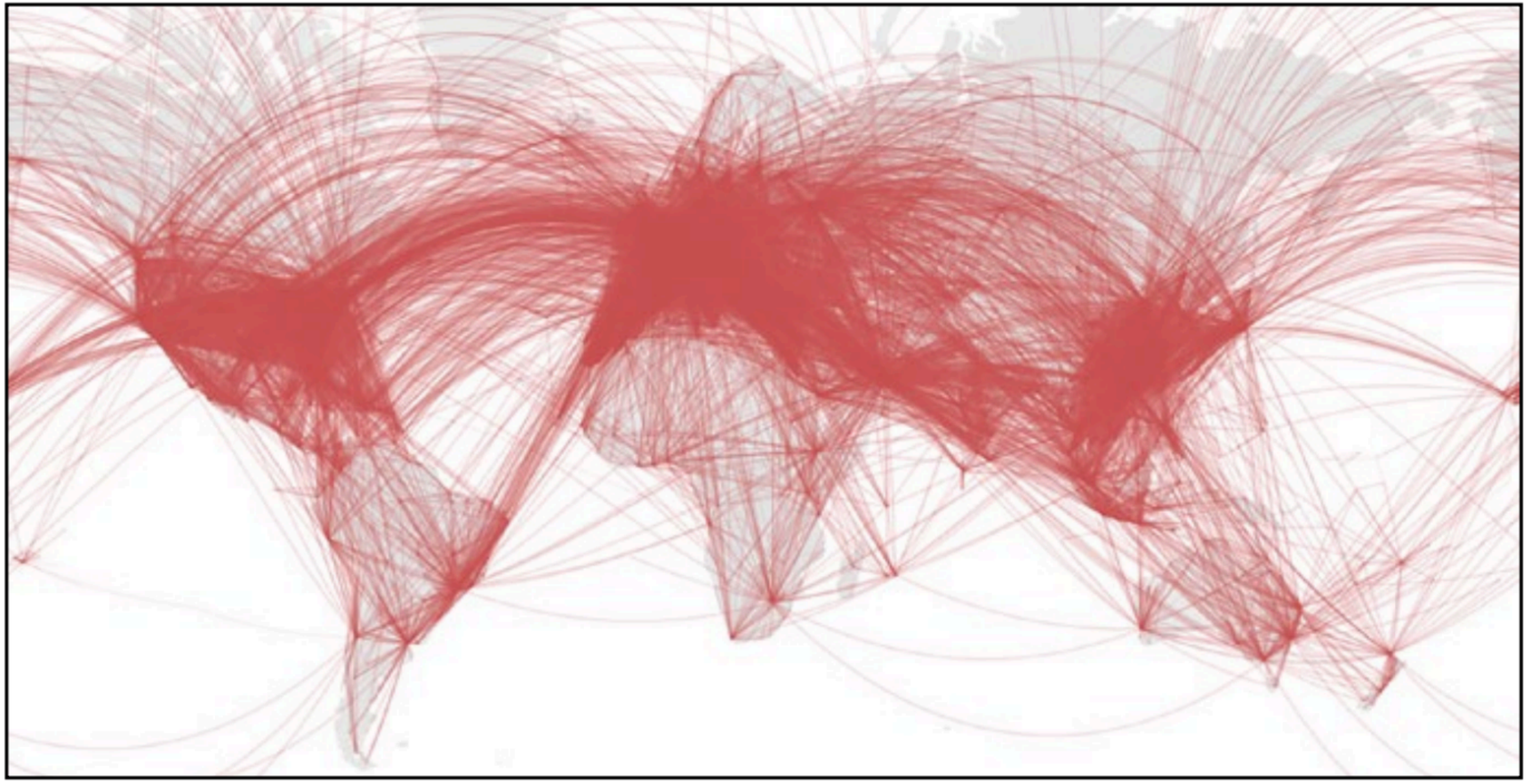
L’impatto del trasporto aereo

Dati di traffico e scenari di decarbonizzazione

Duccio Facchini - Altreconomia - 22 ottobre 2021

City pair connections in April 2019

Source: IATA Economics, using data under license from Flight Radar 24



IL DECOLLO DELL'AVIAZIONE: FLOTTE, VOLI E RICAVI

L'andamento del settore su scala globale. Con lo sguardo a vent'anni fa

Industria globale dell'aviazione	2017	2018*	2019**
Giro d'affari, $ miliardi	787	854	919
% crescita	6,3%	8,6%	7,6%
Partenze dei passeggeri, miliardi	4,1	4,3	4,6
% crescita	7,3%	6,1%	5,6%
Ricavi per passeggero a km, $ miliardi	7.751	8.255	8.754
% crescita	8,0%	6,5%	6,0%
Collegamenti diretti città-città	20.032	21.332	
in confronto al 1998	95%	108%	
Costi del trasporto, US$/RTK (2018$)	79,7	79,3	78,2
in confronto al 1998	-53%	-53%	-54%
Flotta aerea, unità	28.340	29.754	30.968
% crescita	3,5%	5,0%	4,1%
Posti a sedere, milioni	4,1	4,5	4,8
% crescita	5,2%	7,5%	6,9%
Voli programmati, milioni	36,4	38,1	39,8
% crescita	3,6%	4,5%	4,6%
CO_2 emissioni, milioni di tonnellate	859	895	927
% crescita	5,9%	4,2%	3,5%

* stime ** previsioni

Fonte: International Air Transport Association (IATA), 2019

Presentation of 2019 Air Transport Statistical Results

Table 1. World total revenue traffic — international and domestic

(scheduled services, 2010–2019)

Year	Passengers (millions)	Passengers Annual increase %	Passenger-km (millions)	Passenger-km Annual increase %	Freight tonnes (millions)	Freight tonnes Annual increase %	Freight tonne-km (millions)	Freight tonne-km Annual increase %	Mail tonne-km (millions)	Mail tonne-km Annual increase %	Revenue tonne-km (millions)	Revenue tonne-km Annual increase %
2010	2 708	8.7	4 930 250	8.0	48.0	19.2	188 448	19.8	4 653	5.1	650 411	11.7
2011	2 873	6.1	5 254 557	6.6	49.0	2.2	189 013	0.3	4 797	3.1	682 686	5.0
2012	3 007	4.6	5 535 641	5.3	48.4	-1.4	187 042	-1.0	4 978	3.8	706 500	3.5
2013	3 141	4.5	5 839 696	5.5	49.5	2.3	187 786	0.4	5 354	7.5	736 486	4.2
2014	3 320	5.7	6 188 735	6.0	51.1	3.3	196 528	4.7	5 823	8.8	779 667	5.9
2015	3 560	7.2	6 652 791	7.5	51.3	0.5	199 051	1.3	6 276	7.8	827 299	6.1
2016	3 798	6.7	7 144 498	7.4	53.2	3.7	206 175	3.6	6 403	2.0	878 141	6.1
2017	4 066	7.1	7 716 542	8.0	57.0	7.1	225 167	9.2	7 139	11.5	952 960	8.5
2018	4 331	6.5	8 278 782	7.3	58.8	3.2	231 750	2.9	7 070	-1.0	1 011 515	6.1
2019	4 486	3.6	8 685 667	4.9	57.6	-2.1	225 001	-2.9	6 778	-4.1	1 042 878	3.1

Source.— ICAO Air Transport Reporting Form A and A-S plus ICAO estimates.

Fonte: ICAO: Organizzazione internazionale dell'aviazione civile, Nazioni Unite, 2021

Table 2. World revenue traffic — international
(scheduled services, 2010–2019)

Year	Passengers (millions)	Passengers Annual increase %	Passenger-km (millions)	Passenger-km Annual increase %	Freight tonnes (millions)	Freight tonnes Annual increase %	Freight tonne-km (millions)	Freight tonne-km Annual increase %	Mail tonne-km (millions)	Mail tonne-km Annual increase %	Revenue tonne-km (millions)	Revenue tonne-km Annual increase %
2010	1 040	10.6	3 035 975	8.5	30.6	29.2	162 418	21.8	3 221	6.4	452 563	13.5
2011	1 129	8.5	3 267 310	7.6	31.5	2.8	163 084	0.4	3 291	2.2	475 780	5.1
2012	1 196	6.0	3 467 695	6.1	31.0	-1.6	160 798	-1.4	3 415	3.8	492 021	3.4
2013	1 258	5.2	3 665 539	5.7	31.6	2.2	161 288	0.3	3 716	8.8	511 932	4.0
2014	1 339	6.4	3 893 301	6.2	32.8	3.6	169 242	4.9	4 081	9.8	543 087	6.1
2015	1 443	7.7	4 183 411	7.5	33.1	0.8	171 563	1.4	4 365	7.0	574 235	5.7
2016	1 552	7.6	4 504 556	7.7	34.2	3.5	177 484	3.5	4 642	6.4	608 862	6.0
2017	1 659	6.9	4 883 279	8.4	37.4	9.4	195 433	10.1	5 174	11.4	665 066	9.2
2018	1 773	6.9	5 230 145	7.1	38.7	3.4	201 462	3.1	5 129	-0.9	704 025	5.9
2019	1 850	4.3	5 478 491	4.7	37.5	-3.0	194 370	-3.5	4 956	-3.4	721 475	2.5

Source.— ICAO Air Transport Reporting Form A and A-S plus ICAO estimates.

Presentation of 2019 Air Transport Statistical Results

Table 4. Regional distribution of scheduled traffic — 2019

By ICAO statistical region	Aircraft kilometres (millions)	Aircraft departures (thousands)	Passengers carried (thousands)	Passenger-kilometres (millions)	Passenger load factor (%)	Freight tonne-km (millions)	Revenue tonne-km (millions)	Tonne-kilometres available (millions)	Weight load factor (%)
Total (international and domestic) services									
Europe	13 763	9 131	1 171 858	2 325 774	85	53 691	278 258	378 944	73
Percentage of world traffic	24.5	23.8	26.1	26.8		23.9	26.7	24.8	
Africa	1 487	1 195	100 474	185 885	72	4 372	22 576	40 281	56
Percentage of world traffic	2.6	3.1	2.2	2.1		1.9	2.2	2.6	
Middle East	3 763	1 418	227 848	786 348	76	31 016	105 480	177 749	59
Percentage of world traffic	6.7	3.7	5.1	9.1		13.8	10.1	11.6	
Asia and Pacific	18 765	12 400	1 660 547	3 017 647	82	84 746	365 156	518 123	70
Percentage of world traffic	33.4	32.4	37.0	34.7		37.7	35.0	33.9	
North America	15 172	11 315	1 020 089	1 930 812	85	44 893	223 830	344 754	65
Percentage of world traffic	27.0	29.5	22.7	22.2		20.0	21.5	22.5	
Latin America and Caribbean	3 249	2 840	305 396	439 202	82	6 283	47 577	70 236	68
Percentage of world traffic	5.8	7.4	6.8	5.1		2.8	4.6	4.6	
Total	56 199	38 299	4 486 211	8 685 667	82	225 001	1 042 878	1 530 087	68

Fonte: ICAO: Organizzazione internazionale dell'aviazione civile, Nazioni Unite, 2021

Table 2
Share of flying population adjusted for non-flying share of population, 2018.

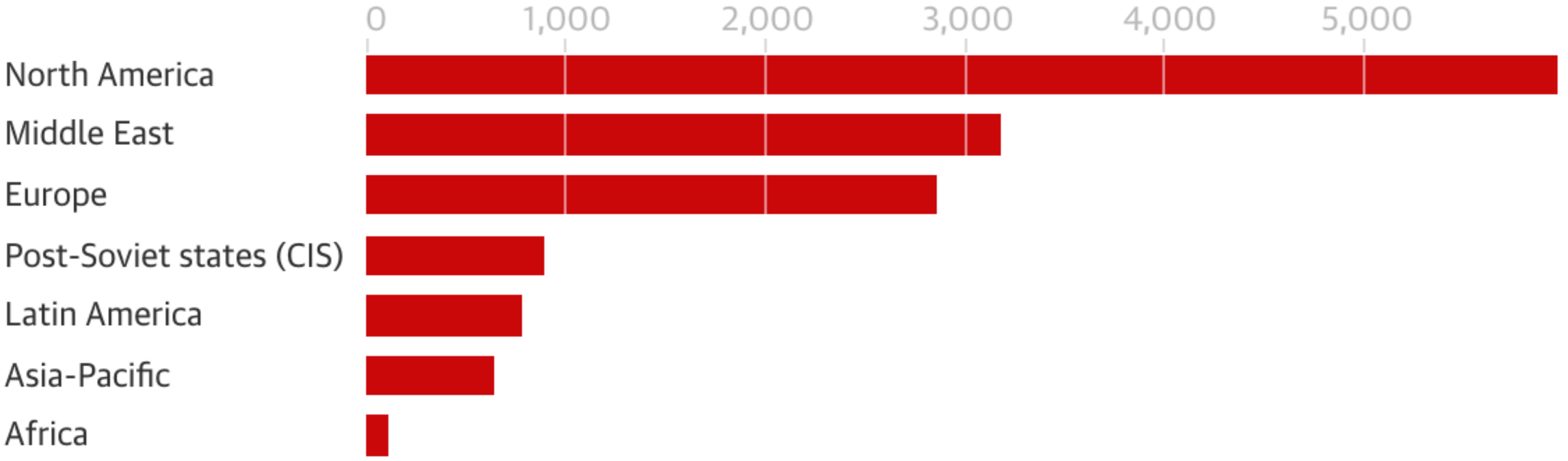
	Population (million)*	Passengers(million)*	Passengers per capita of the population	Flying population (%)	Flying population (million)
Low income	705	23	0.03	0.7	4.9
Lower middle	3,023	454	0.15	3	90.7
Upper middle	2,656	1,313	0.49	10	265.6
High income	1,210	2,442	2.02	40	484.0
Total	7,594	4,233			845.2

Source: own calculations, based on World Bank (2020b)*. Flying population: The share/number of the population/people in each income group that flies at least once per year.

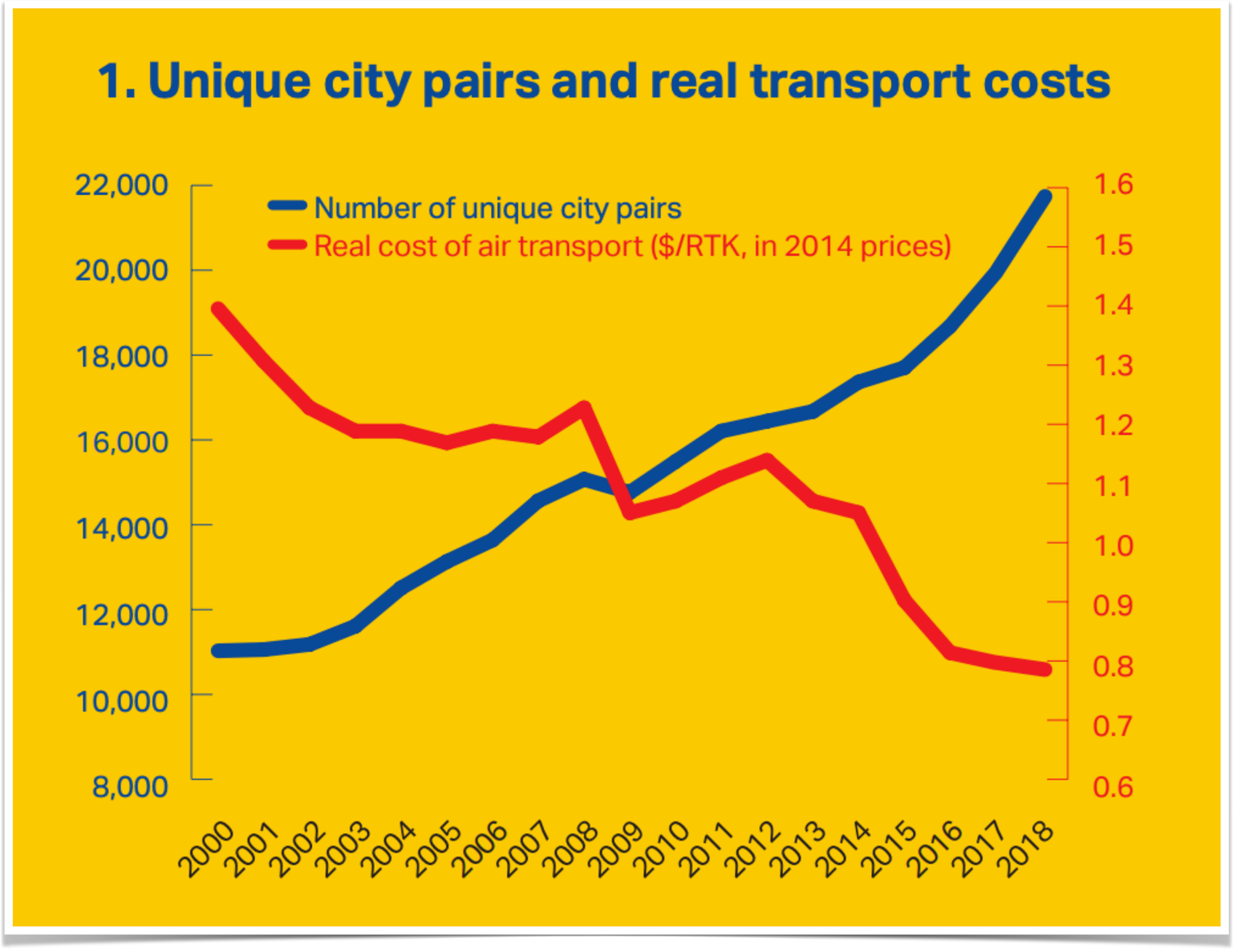
Fonte: StefanGössling, AndreasHumpe, “The global scale, distribution and growth of aviation: Implications for climate change”, 2020

North Americans flew 50 times further than Africans in 2018

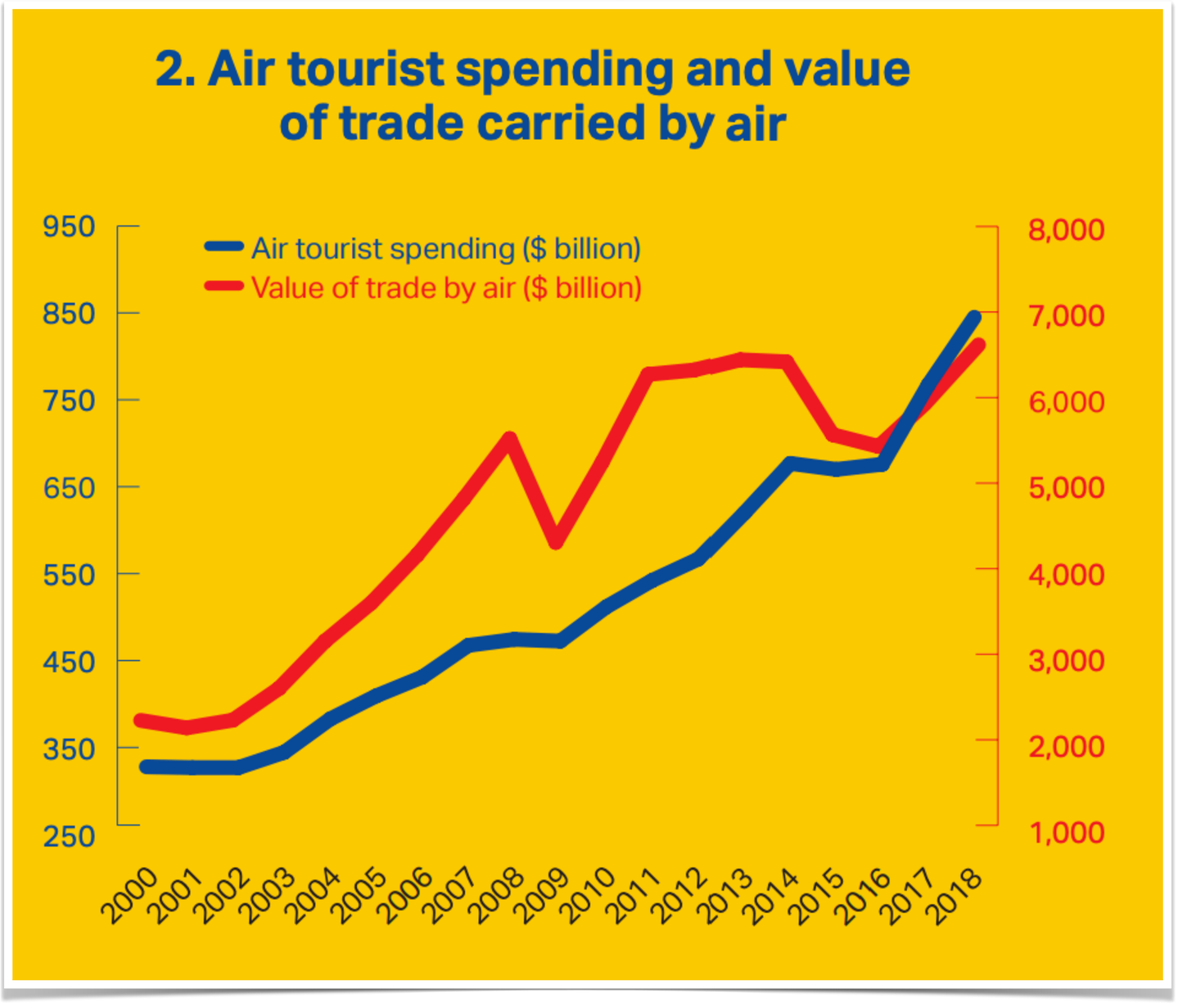
Passenger kilometres per capita



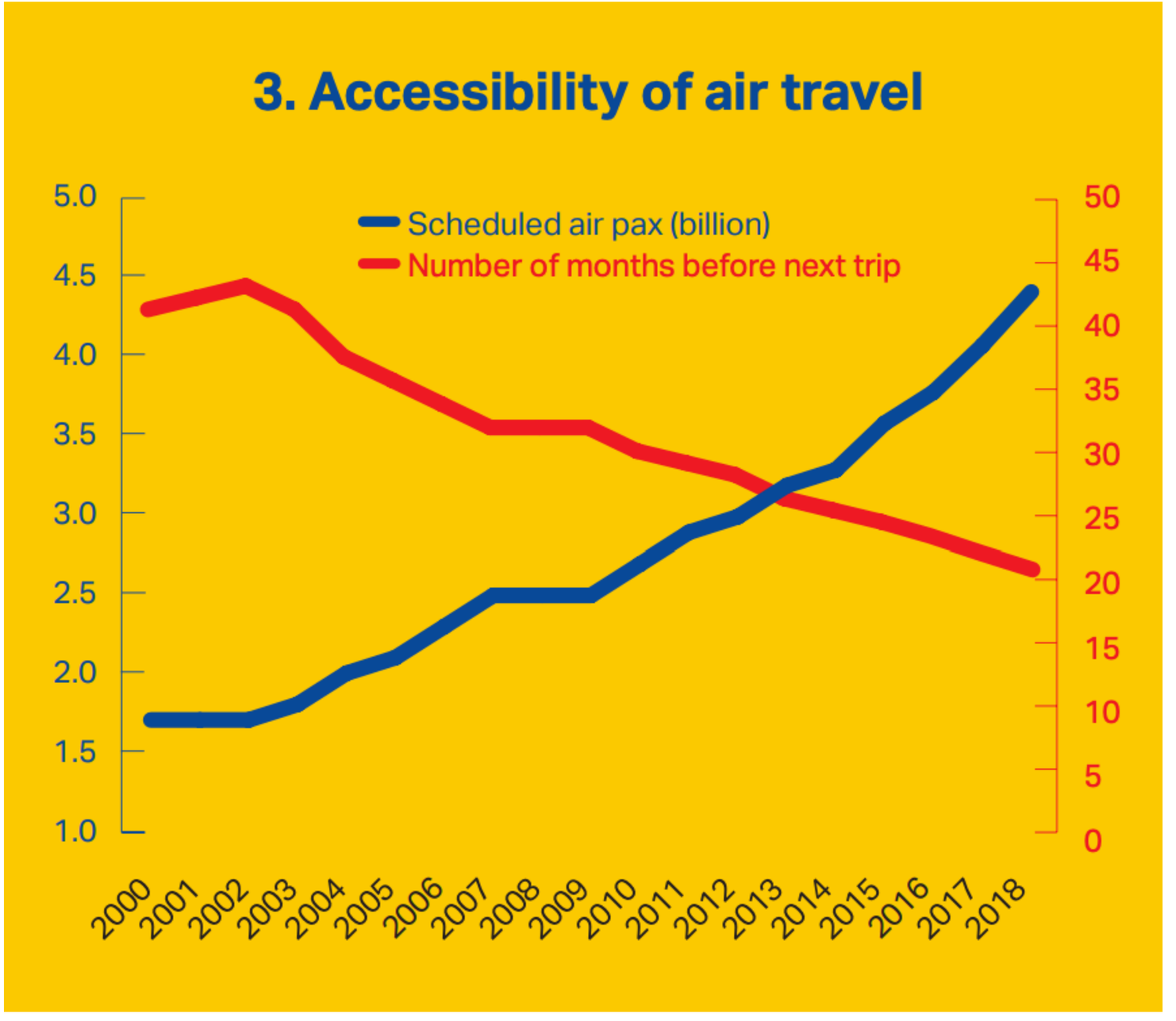
Guardian graphic | Source: Gössling & Humpe, Global Environmental Change, 2020



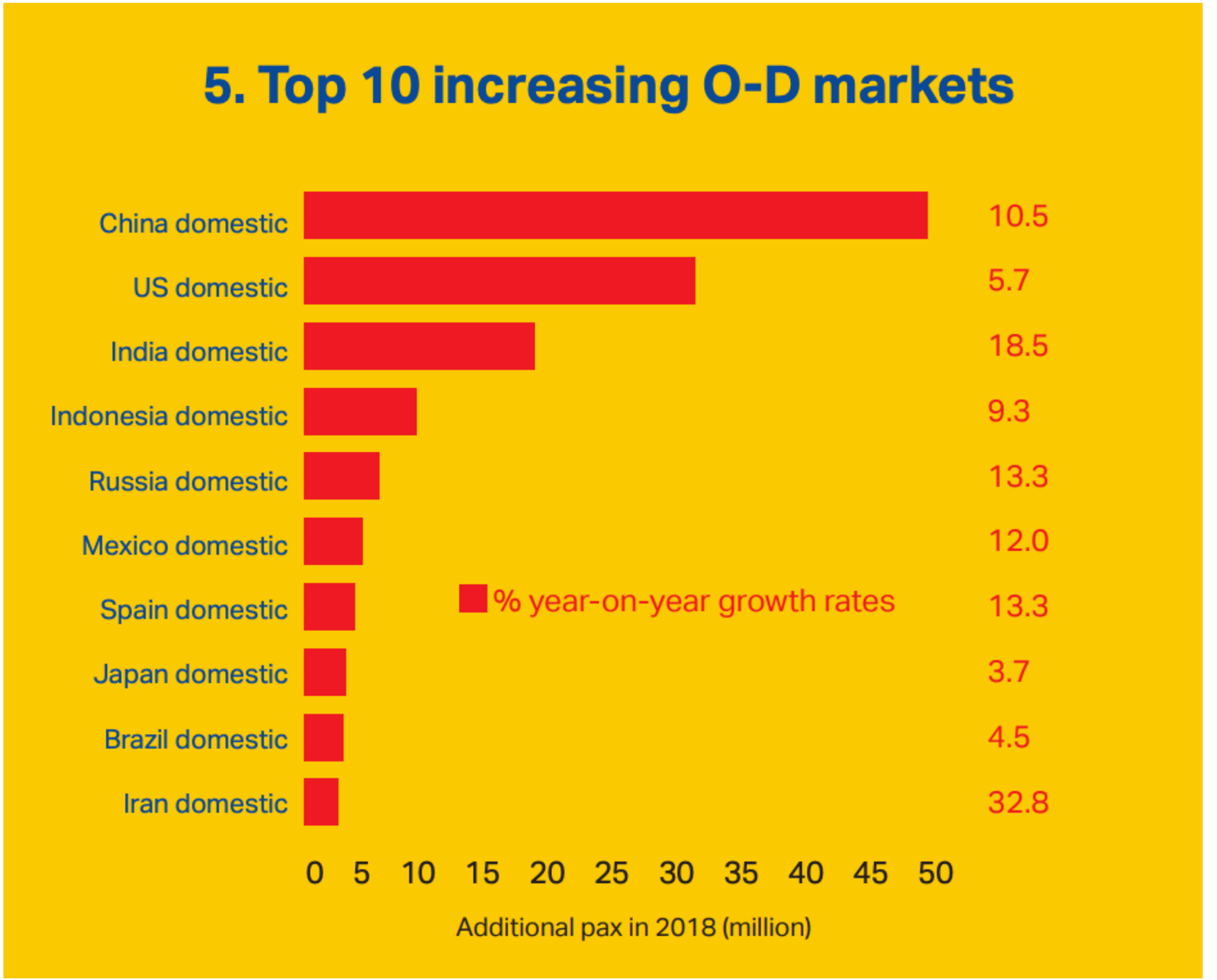
Fonte: IATA, Annual report, 2019



Fonte: IATA, Annual report, 2019



Fonte: IATA, Annual report, 2019



Fonte: IATA, Annual report, 2019

Airport investments

IATA's work to align major infrastructure investments with airline needs resulted in some substantial benefits in 2018:

1. Johannesburg Airport
The Airports Company South Africa (ACSA)'s investment plan was prioritized based on airline requirements. This will speed up the addition of much-needed capacity and defer unwarranted investments in a $3 billion capital program.

2. Brasilia Airport
Revisions to the design plans of the terminal expansion were secured, improving capacity utilization and connection times and simplifying passenger flows through the flexible and efficient introduction of "swing gates" for international and domestic operations.

3. Buenos Aires Airport
Operational capacity improvements at Aeroparque Jorge Newbery Airport (AEP) resulted in passenger experience and level of service improvements without the need for infrastructure investment. A detailed review of airside, landside, and air traffic control operations resulted in 66 recommendations to improve operations, capacity, and passenger experience. It is projected that implementing all of the recommendations, targeted for 2020, could increase operational capacity at AEP as much as 35%.

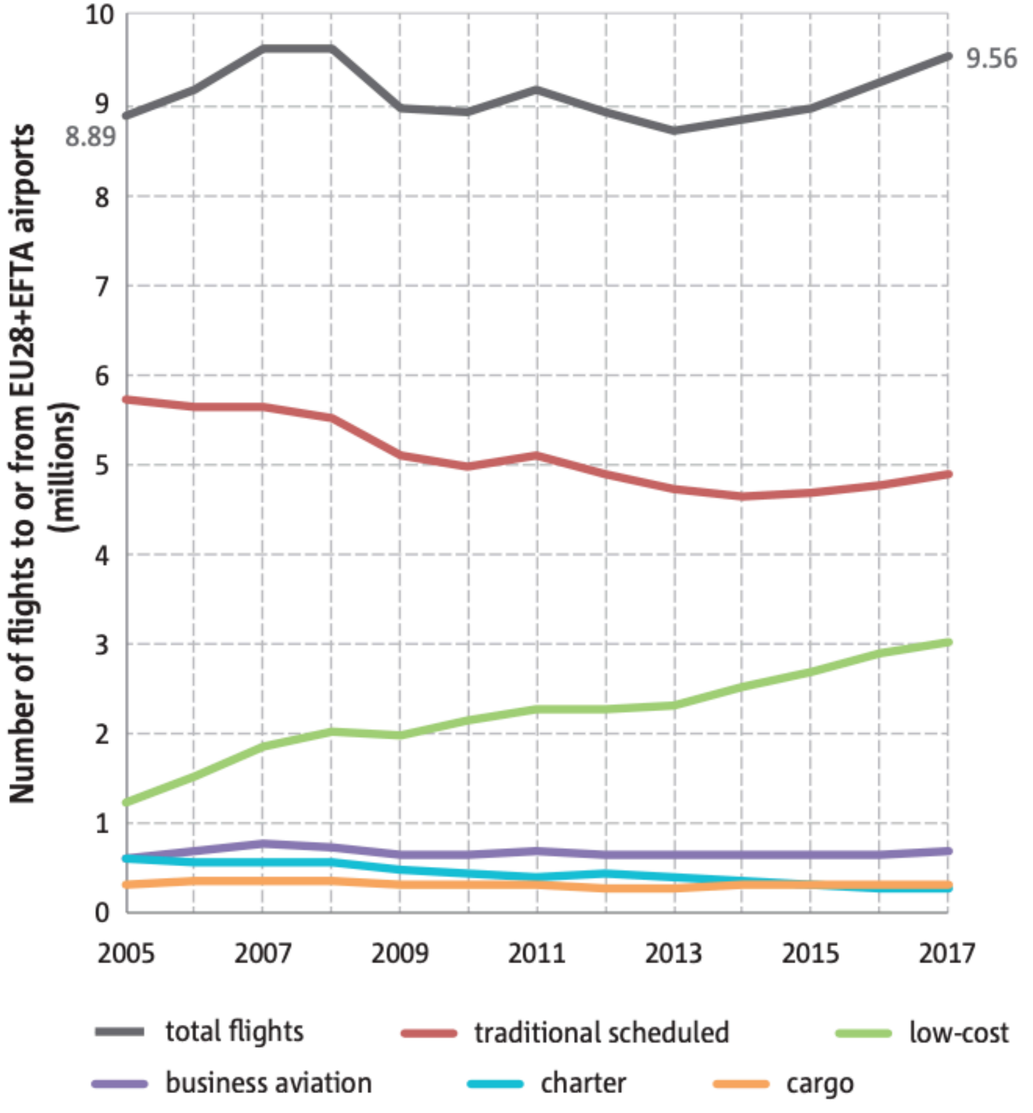
4. Munich Airport
The Munich Airport investment plan was improved to increase capacity utilization, simplify passenger flows, and optimize design. This will ensure that the $400 million investment program is aligned to meet the needs of airlines.

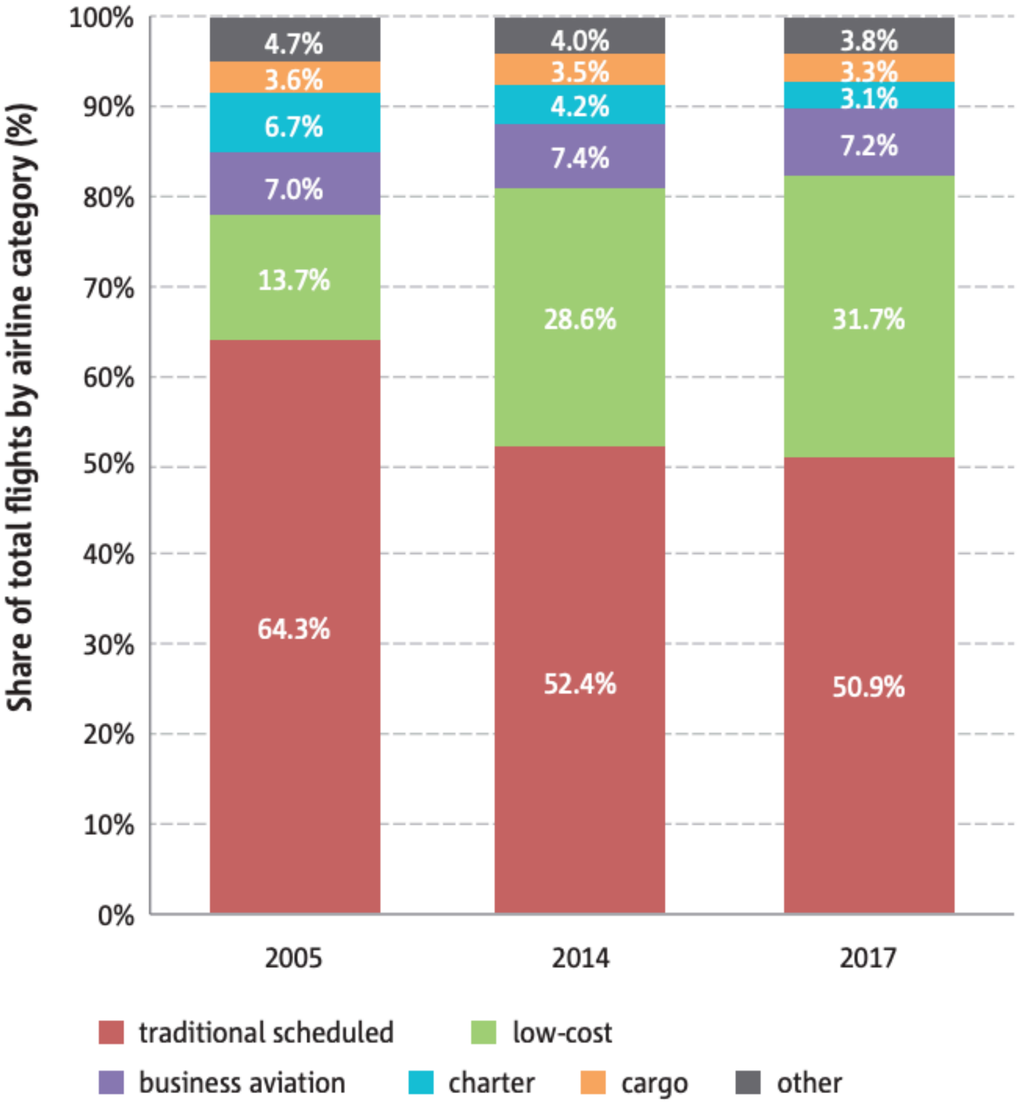
5. Stockholm Arlanda Airport
Airport operator Swedavia removed US preclearance from its investment plan. This achieved a $50 million reduction in the airport capital program and resolved airlines' concerns on minimum connection times and capacity utilization.

6. Manchester Airport
IATA's involvement in and implementation of a consultation governance structure as part of Manchester Airport's £1 billion investment plan resulted in substantial improvements in the design and phasing of terminal piers, parking stands, and passenger amenities—without raising capital costs.

Fonte: IATA, Annual report, 2020

Figure 1.1 An increase in both low-cost and traditional scheduled flights has driven the recent return to growth





Fonte: European Union Aviation Safety Agency, European Aviation Environmental Report, 2019

Aviation is an amazing industry. I call it the business of freedom

Alexandre de Juniac, Director General and CEO

In 2018 the world's airlines provided about 4 billion passengers the freedom to travel over a global network of some 22,000 routes. The average cost of this transport was half that of two decades ago. And since 2010 the carbon footprint per passenger has reduced by aboout 2.8% per year.

Last year, airlines also enabled the freedom to do business globally by transporting 64 million tonnes of cargo to markets around the world. This activity supported a third of global trade by value, generated 65 million jobs and underpinned $2.7 trillion of GDP.

In 2018 the world's airlines earned a collective net profit of $30 billion. Industry revenues topped $812 billion and 8% return on invested capital was generated.

In each year since 2010 the airline industry earned an aggregate profit. And since 2015 that profit has exceeded the average cost of capital. While some airlines continue to face financial challenges, this nine-year profitability streak at the industry level marks a major shift from the sector's historic boom-bust financial cycle.

The industry's newly found financial resilience enables it to weather shifts in the operating environment without plunging into crisis. Nonetheless, we expect profits to be squeezed in 2019 as a result of oil price volatility, rising costs for labor and infrastructure, ever-increasing taxation, and a tapering of demand.

The threat of trade wars and protectionist activity also looms large. Globalization has made our world more prosperous. And aviation will play a central role in enabling a more inclusive globalization that spreads its benefits more evenly. But we must be firm in insisting on borders that are open to people and to trade, or the benefits of aviation will be severely curtailed.

Over the next two decades, the demand for air transport is expected to double. The ability to successfully meet this demand will require the industry to excel in several areas. And, as aviation remains a highly regulated industry, governments will play a key role. With the 40th ICAO Assembly scheduled for late in 2019 we have an important opportunity to engage government action at the global standard-setting level.

Safety

Air transport is the safest form of long-distance travel. And all involved with aviation are committed to making it ever safer. That was confirmed again in 2018 when the industry's safety performance showed marked improvement on the ten year average. But two tragic crashes with the newly introduced Boeing 737 Max have knocked the industry's heretofore impressive reputation.

We can be fully confident that a technical solution will be found to address the issues that have been identified. But there are critical questions still to be answered. What more can be done to ensure the safe introduction of new technology? How can we reinforce collective international confidence into state certification systems? And how can authorities and the industry coordinate better to maintain public confidence?

Security

Security is an equal partner to safety. Flying is secure. But the level of international cooperation and information sharing by governments who have the primary responsibility for security continues to lag behind that of safety. Moreover, many states struggle to implement the baseline international security standards in Annex 17 of the Chicago Convention.

The industry strongly supports the development of the Global Aviation Security Plan through ICAO as a means of taking a major forward.

Sustainability

The October 2018 publication of a UN assessment of the world's progress towards containing climate change to the Paris Agreement's aims raised alarm bells. Aviation, along with all industries, is coming under even greater environmental scrutiny. In Europe, the pressure is particularly intense.

We must not forget that aviation was among the first industries, if not the first, to outline a plan to achieve carbon neutral growth (CNG). And we are committed to achieve it from 2020.

Preparations for CNG took a giant step in January 2019 with airlines beginning their emissions monitoring for the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). Agreed by the International Civil Aviation Organization (ICAO) in 2016, CORSIA was approved with the full support—indeed with the urging—of the aviation industry.

CORSIA is just one pillar of the industry's commitment to stabilize net carbon emissions from 2020, and to cut its net carbon footprint to half the 2005 level by 2050. And science tells us that fulfilling this will be consistent with the 1.5-degree-goal of the Paris Agreement.

But there is urgent need to more concretely demonstrate the ambition of our commitments. And we must be relentless in our efforts to insist that CORSIA is effectively implemented, that strategic investments are made to commercialize sustainable aviation fuels and that the bottlenecks in air traffic management are sorted. Together with continued investment in greener technologies, these will deliver a significant reduction in aviation's carbon footprint.

Infrastructure

Meeting the demand for connectivity depends on availability of infrastructure. In many parts of the world we already struggle with the physical limitations of available airports and airspace. As demand grows that will only get more acute.

Reminding governments to work with the industry to build sufficient infrastructure at affordable cost will continue to be a long-term top priority. And in the short term there is enormous potential to deliver greater efficiency and a better customer experience with the infrastructure we currently have.

The industry agenda is broad. Travelers will appreciate the technology driven innovations such as the One ID program to smoothly move travelers through the airport with a single biometric token, and plans to enhance baggage tracking. Parallel efforts to modernize slot allocation rules, reform airspace management and find better means to fund infrastructure development will deliver less visible but equally important gains.

People

People are the key resource to take aviation forward. Our industry provides high quality jobs that add value to economies in which they are located. Aviation careers are attractive, but there is growing concern about how the industry will find sufficient technically skilled employees quickly enough to keep pace with demand.

There are no easy answers, but it is clear that increasing female participation in the industry is a tremendous opportunity. Finding ways to balance gender diversity in all job categories will provide huge potential to strengthen our business and ensure the people we need to sustain the industry.

Your association

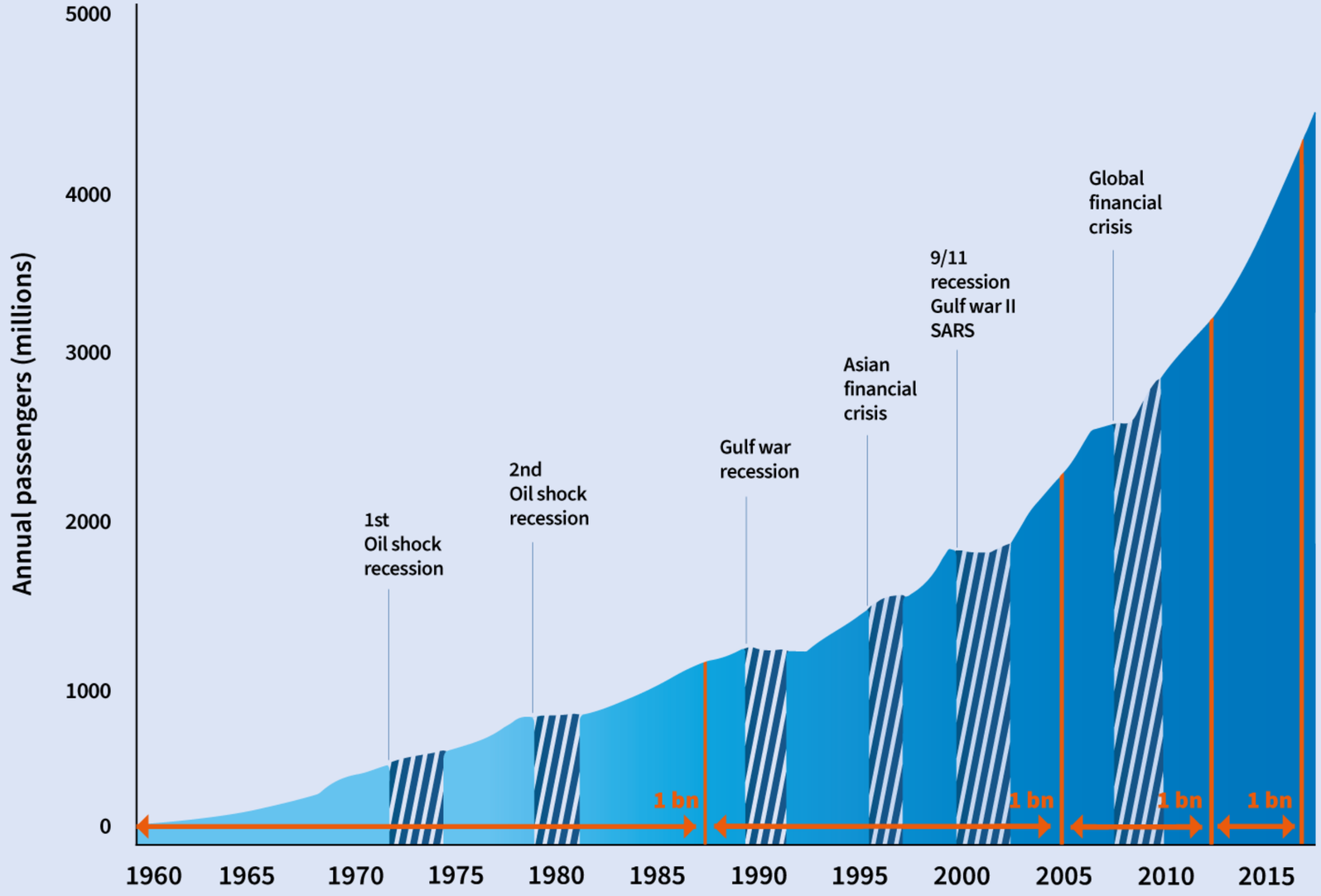
The industry counts on IATA. Global standards developed by our members through IATA underpin day-to-day operations worldwide. Our efficient settlement systems now settle over $460 billion annually. And IATA's products and services are tailored to help the success of our members while funding industry activities. As your trade association, IATA's global workforce is fully focused on adding value to the businesses of our members.

IATA is proud to lead, represent and serve the airline industry as we address these and other issues with governments and industry stakeholders. Our vision is to work together with our almost 300 member airlines to shape the future growth of a safe, secure and sustainable air transport industry that connects and enriches our world.

Alexandre de Juniac
Director General and CEO

Fonte: IATA, Annual report, 2019

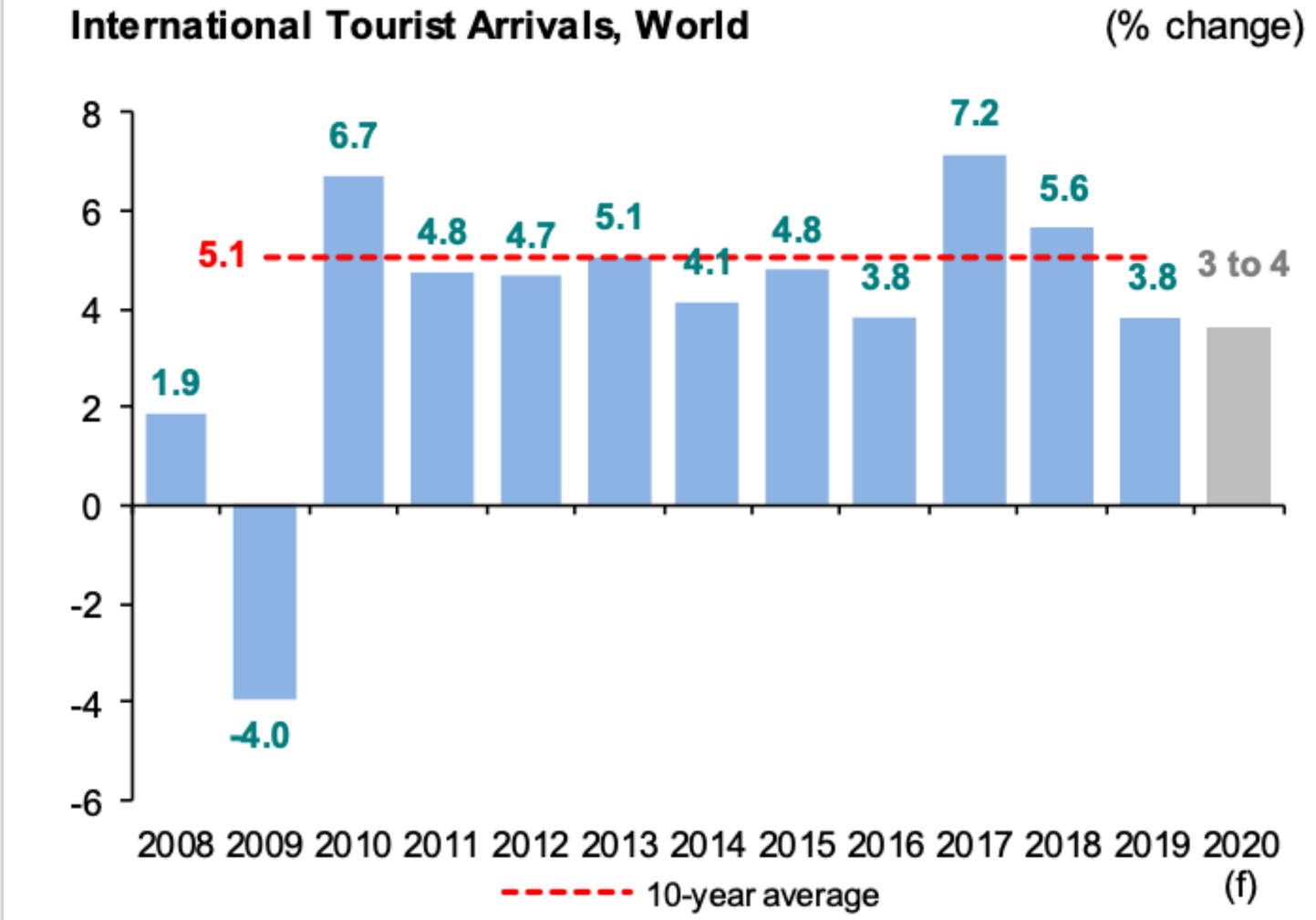
Airline traffic repeatedly hits record highs after global crises



TRANSPORT & ENVIRONMENT @transenv @transenv transportenvironment.org

Source: Boeing, Commercial Market Outlook 2019–2038

Fonte: UNWTO, 2020



Source: World Tourism Organization (UNWTO) ©

(f) Forecast

Climate change

Aviation emissions

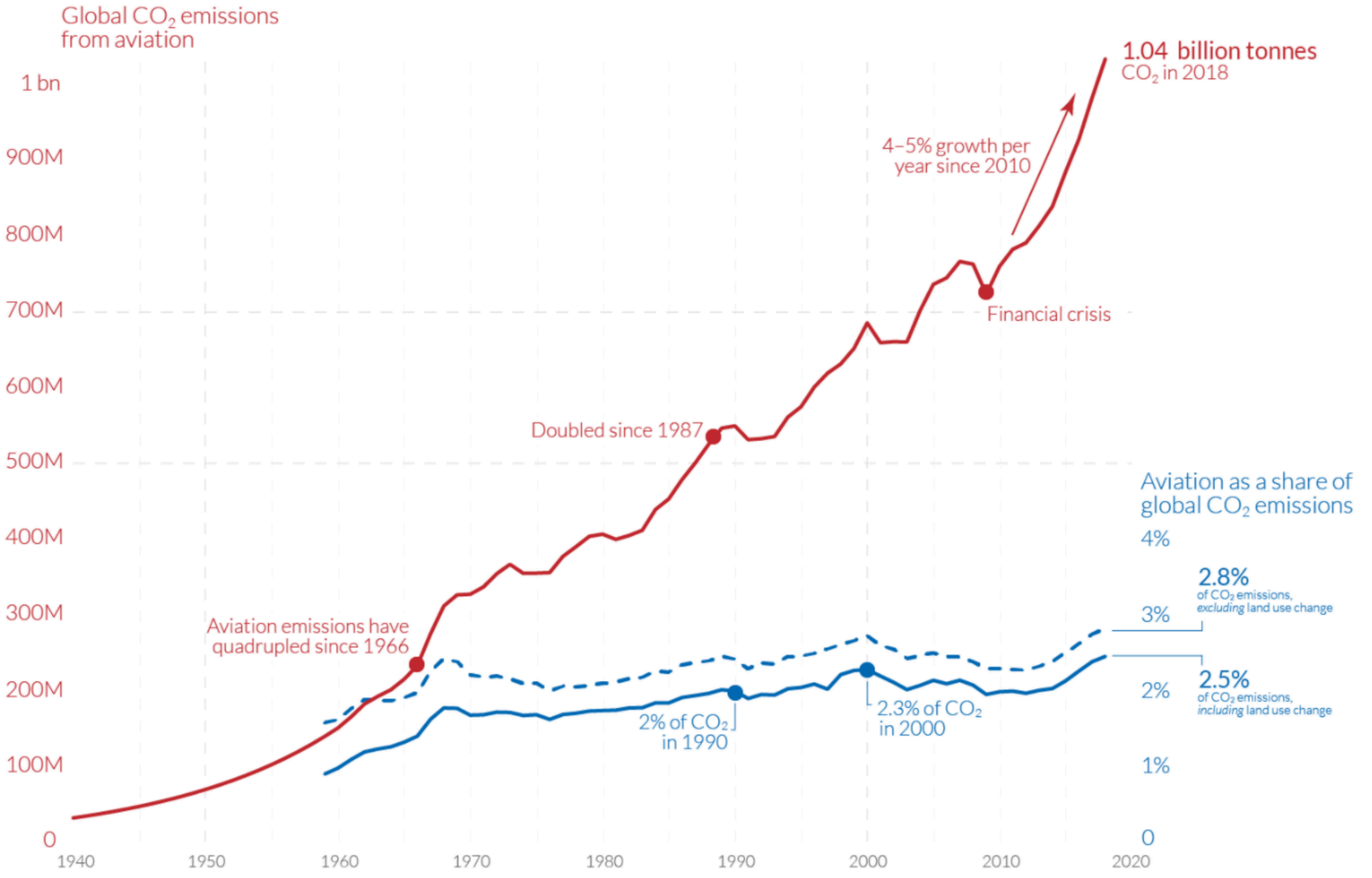
The Intergovernmental Panel on Climate Change (IPCC) is the international body responsible for assessing the science related to climate change. It was set up in 1988 by the World Meteorological Organization and United Nations Environment Programme to provide policymakers with regular assessments of the scientific basis of climate change, its impacts and future risks, and options for adaptation and mitigation. In October 2018, the IPCC published its Special Report into the impacts of global warming of 1.5°C above pre-industrial levels to support the Paris Agreement process. It concluded that climate warming due to human activities is currently estimated to increase by 0.2°C per decade due to past and ongoing emissions. In order to stabilise warming at 1.5°C, global net CO2 emissions from human activities would have to decline to 45% of 2010 levels by 2030, reaching net zero by around 2050 [**98**].

The IPCC considers carbon dioxide (CO_2) as the principal greenhouse gas. Aviation represents approximately 2 to 3% of the total annual global CO_2 emissions from human activities and, in addition to CO_2, has impacts on climate from its non-CO_2 emissions (e.g. NO_X, particles).

Global carbon dioxide emissions from aviation

Aviation emissions includes passenger air travel, freight and military operations. It does not include non-CO_2 climate forcings, or a multiplier for warming effects at altitude.

Our World in Data



OurWorldinData.org – Research and data to make progress against the world's largest problems.

Source: Lee et al. (2020). The contribution of global aviation to anthropogenic climate forcing for 2000 to 2018; based on Sausen and Schumann (2000) & IEA.
Share of global emissions calculated based on total CO_2 data from the Global Carbon Project.

Airline industry

This article is more than **10 months old**

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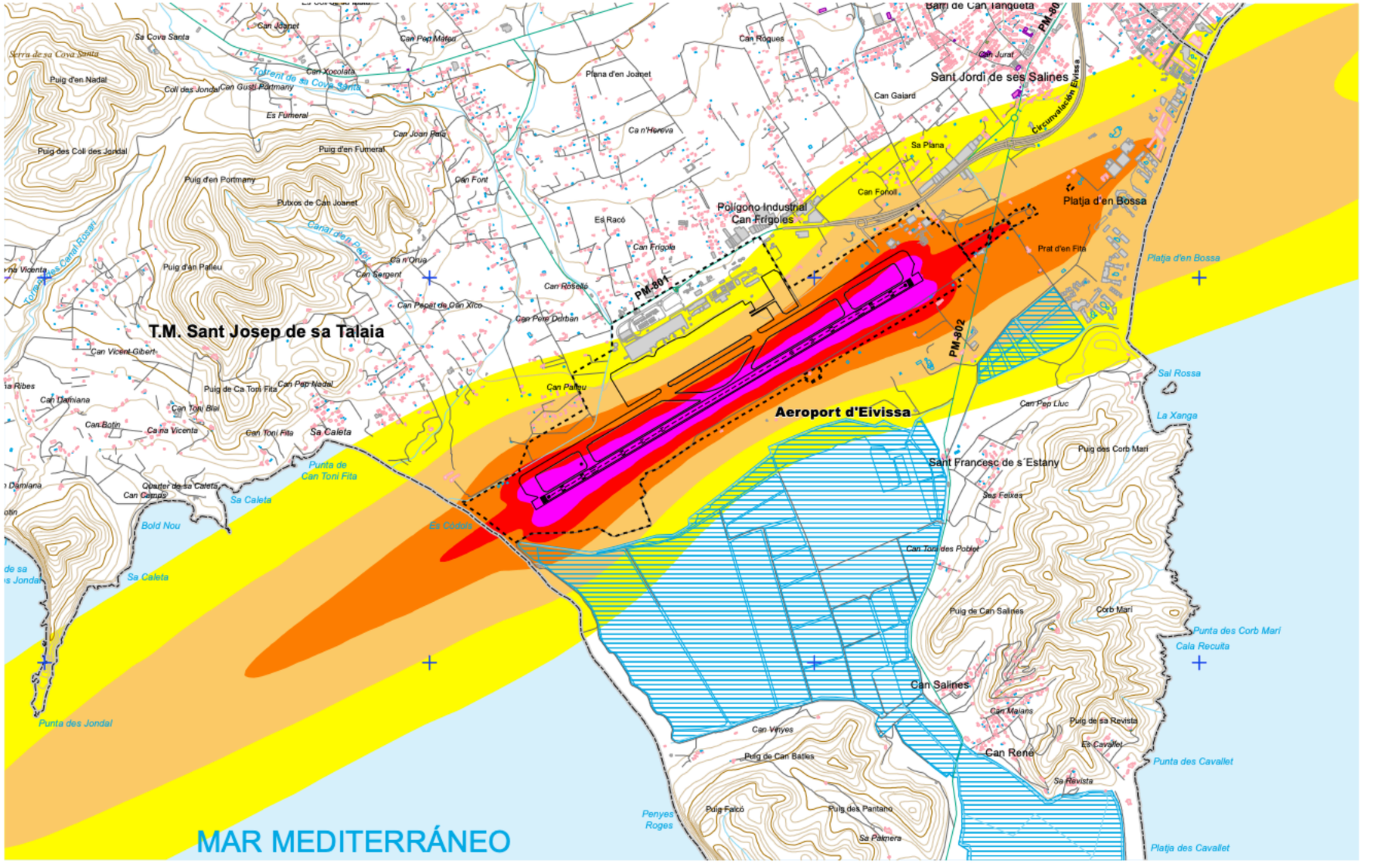
EAER DASHBOARD[2]

	Indicator	Units	2017	% change since 2014	% change since 2005
Traffic	Passenger kilometres flown by commercial flights[(1)]	billion	1,643	+20%	+60%
	Number of city pairs served most weeks by scheduled flights[(1)]		8,603	+11%	+43%
Noise	Number of people inside L_{den} 55 dB noise contours[(2)]	million	2.58	+14%	+12%
	Average noise energy per flight[(3)]	10^9 Joules	1.24	-1%	-14%
Emissions	Full-flight CO_2 emissions[(1)]	million tonnes	163	+10%	+16%
	Full-flight 'net' CO_2 emissions with ETS reductions[(1)]	million tonnes	136	+3%	n/a[(4)]
	Full-flight NO_x emissions[(1)]	thousand tonnes	839	+12%	+25%
	Average fuel consumption of commercial flights[(1)]	litres fuel per 100 passenger kilometres	3.4	-8%	-24%

(1) All departures from EU28+EFTA
(2) 47 major European airports
(3) All departures and arrivals in EU28+EFTA
(4) ETS not applicable to aviation in 2005

Fonte: European Union Aviation Safety Agency, European Aviation Environmental Report, 2019

Figure 1.6 Example of an airport noise contour (Source: Aeropuertos Españoles y Navegación Aérea)

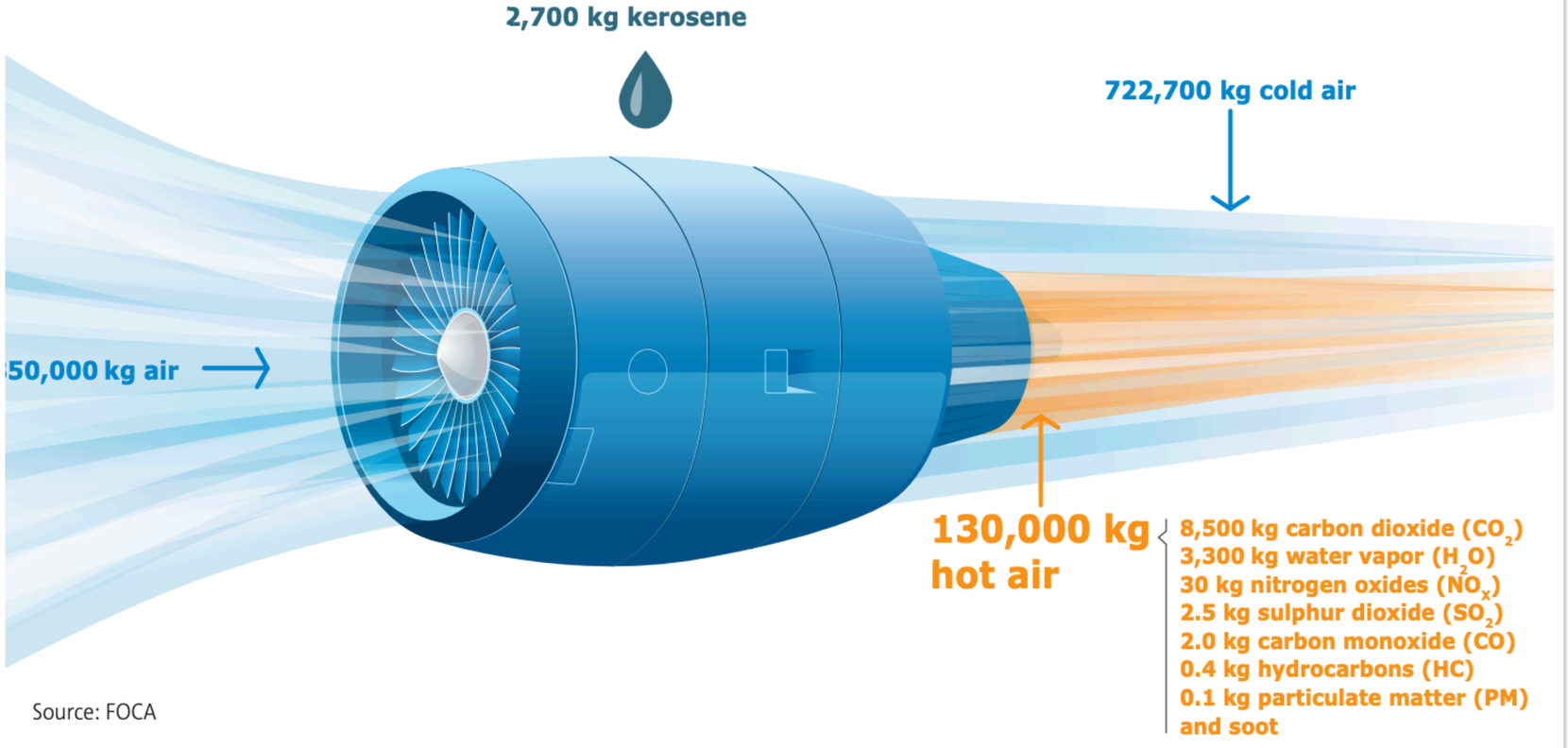


Fonte: European Union Aviation Safety Agency, European Aviation Environmental Report, 2019

1.3 Emissions

The main pollutants emitted by aircraft engines in operations are carbon dioxide (CO_2), nitrogen oxides (NO_x), sulphur oxides (SO_x), unburnt hydrocarbons (HC), carbon monoxide (CO), particulate matter (PM) and soot (Figure 1.8). This section provides trends in full-flight emissions of all flights departing from EU28 and EFTA airports.

Figure 1.8 Emissions from a typical two-engine jet aircraft during 1-hour flight with 150 passengers



Source: FOCA

Fonte: European Union Aviation Safety Agency, European Aviation Environmental Report, 2019

EASA

Environment

European Aviation Environmental Report

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  - Air Quality
  - Climate Change
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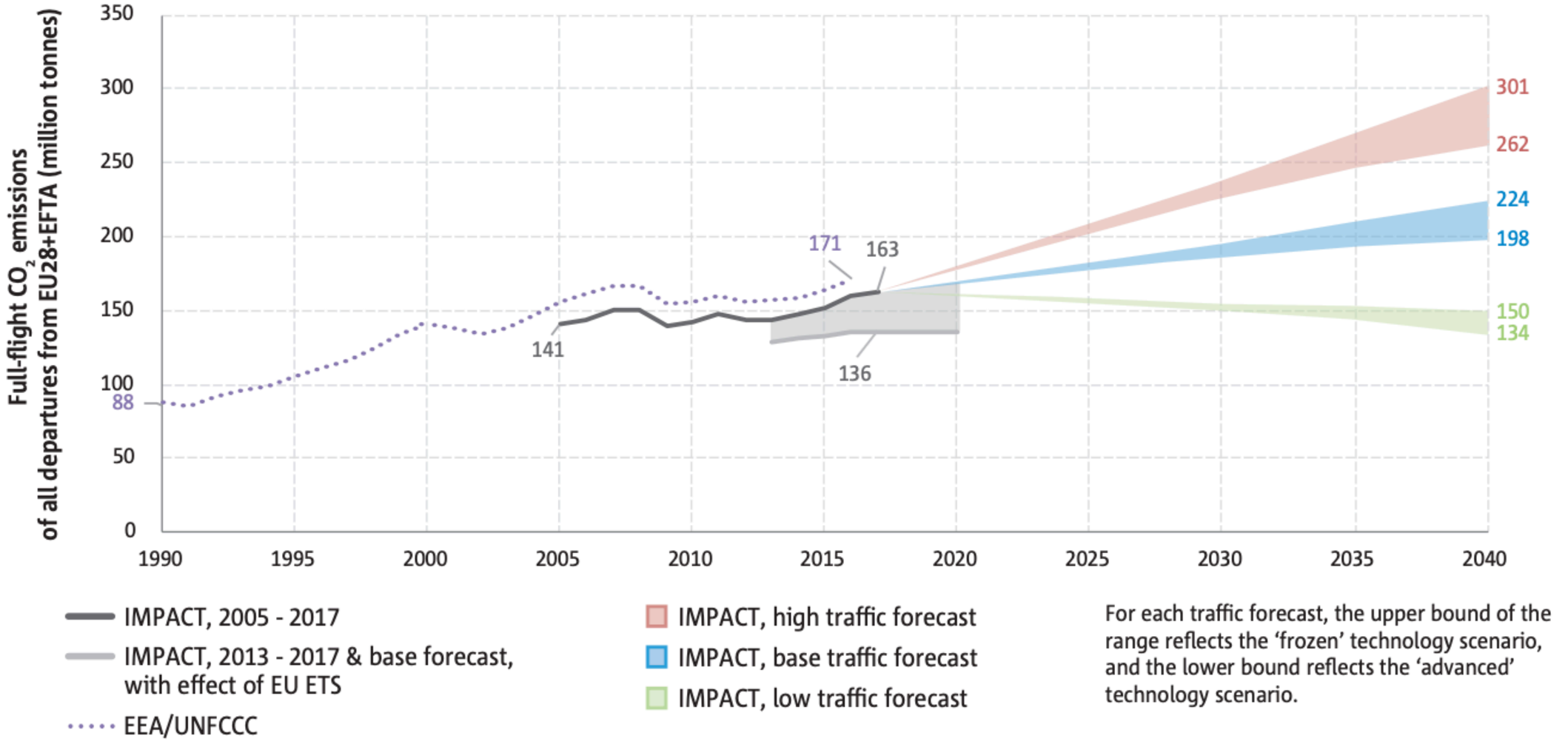
  - Executive Summary
  - Introduction
  - **Overview of Aviation Sector**
  - Technology and Design
  - Sustainable Aviation Fuels
  - Air Traffic Management and Operations
  - Airports
  - Market-Based Measures
  - Aviation Environmental Impacts
- List of Resources
- Models, Data and Assumptions

Overview of Aviation Sector

- The number of flights in EU28+EFTA increased by 8% between 2014 and 2017, and grows by 42% from 2017 to 2040 in the most-likely forecast.
- Technological improvements, fleet renewal and increased operational efficiency have been able to partially counterbalance the impact of recent growth, but there has still been an increase in overall noise and emissions since 2014.
- In 2016, aviation was accountable for 3.6% of the total EU28 greenhouse gas emissions and for 13.4% of the emissions from transport.
- In 2011, aviation accounted for 3.2% of the total population exposed to L_{den} levels above 55 dB from all sources covered by the EU Environmental Noise Directive.
- The number of people exposed to significant noise around 47 major European airports shows potential stabilisation, but under an assumption of no change in population and no airport expansion.
- The number of major airports that handle more than 50,000 annual aircraft movements is expected to increase from 82 in 2017 to 110 in 2040, and therefore aviation noise may well affect new populations.
- The environmental efficiency of aviation continues to improve and, by 2040, further improvements are expected in average fuel burn per passenger kilometre flown (-12%) and noise energy per flight (-24%).
- By 2040, CO_2 and NO_X emissions are predicted to increase by at least 21% and 16% respectively.

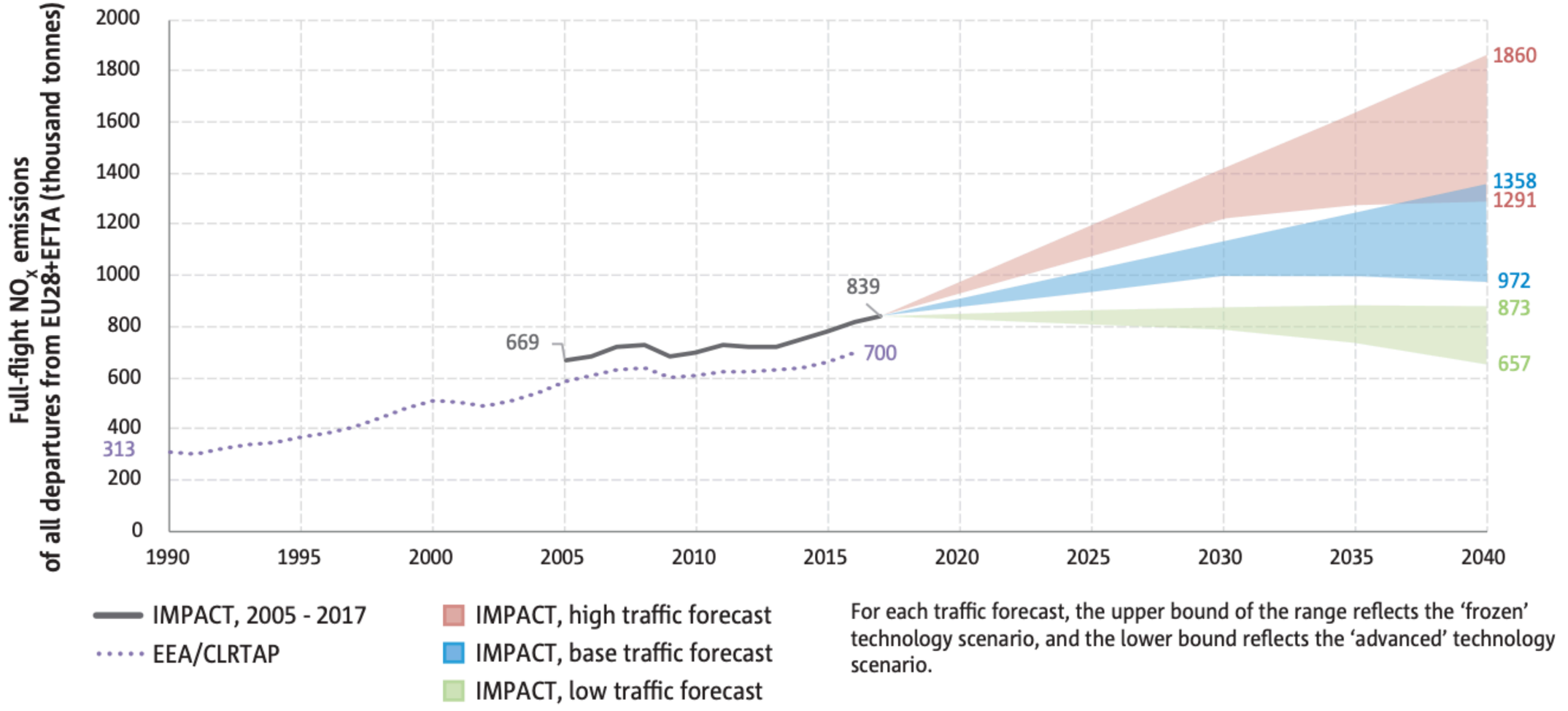
Fonte: European Union Aviation Safety Agency, European Aviation Environmental Report, 2019

Figure 1.9 CO_2 emissions are steadily increasing again since 2013



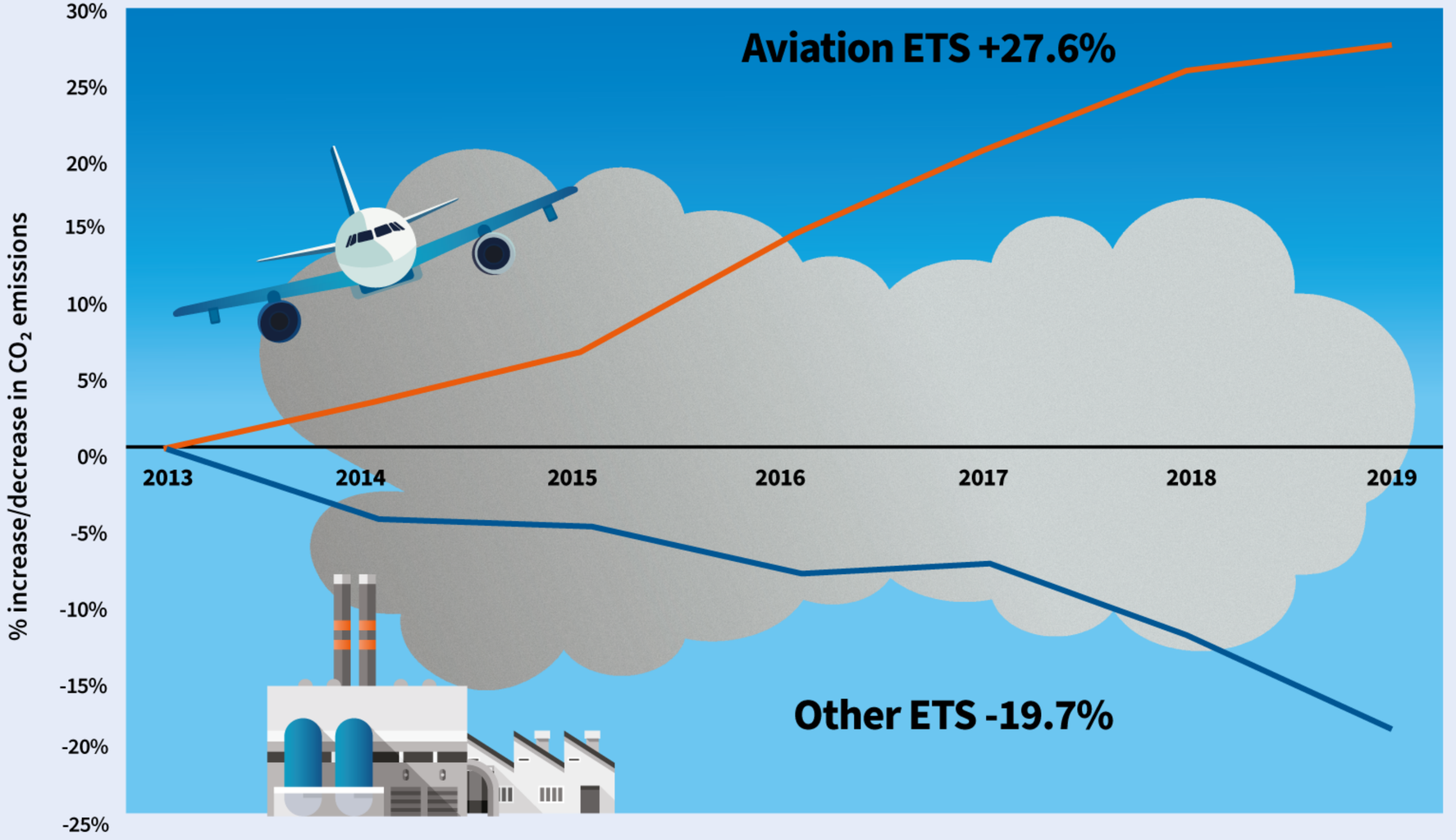
Fonte: European Union Aviation Safety Agency, European Aviation Environmental Report, 2019

Figure 1.10 NO_x emissions will increase further, but advanced engine combustor technology could help curb their growth after 2030



Fonte: European Union Aviation Safety Agency, European Aviation Environmental Report, 2019

Aviation emissions have grown 28% in Europe since 2013



Note: Emissions of bankrupt airlines that were not reported for 2019 were approximated based on 2018 emissions and number of months in operation. This assumption adds approximately 1% to the verified reported emissions.

Source: European Commission, 2020

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About the Airport Tracker

The Airport Tracker is an online tool that illustrates the carbon dioxide (CO_2) emissions generated from aircraft departing from airports around the world.

It is a joint project by the International Council on Clean Transportation (ICCT), ODI, and Transport and Environment (T&E).

The Tracker contains information for the 1,300 largest global airports, covering 99% of global airline passenger traffic. It shows the total amount of passenger-related emissions generated by each airport (and excludes the freight emissions). A methodology note is available in the Resources page.

We are making this data available to the public to provide transparency, accountability and comparability of global airport infrastructure-related emissions.

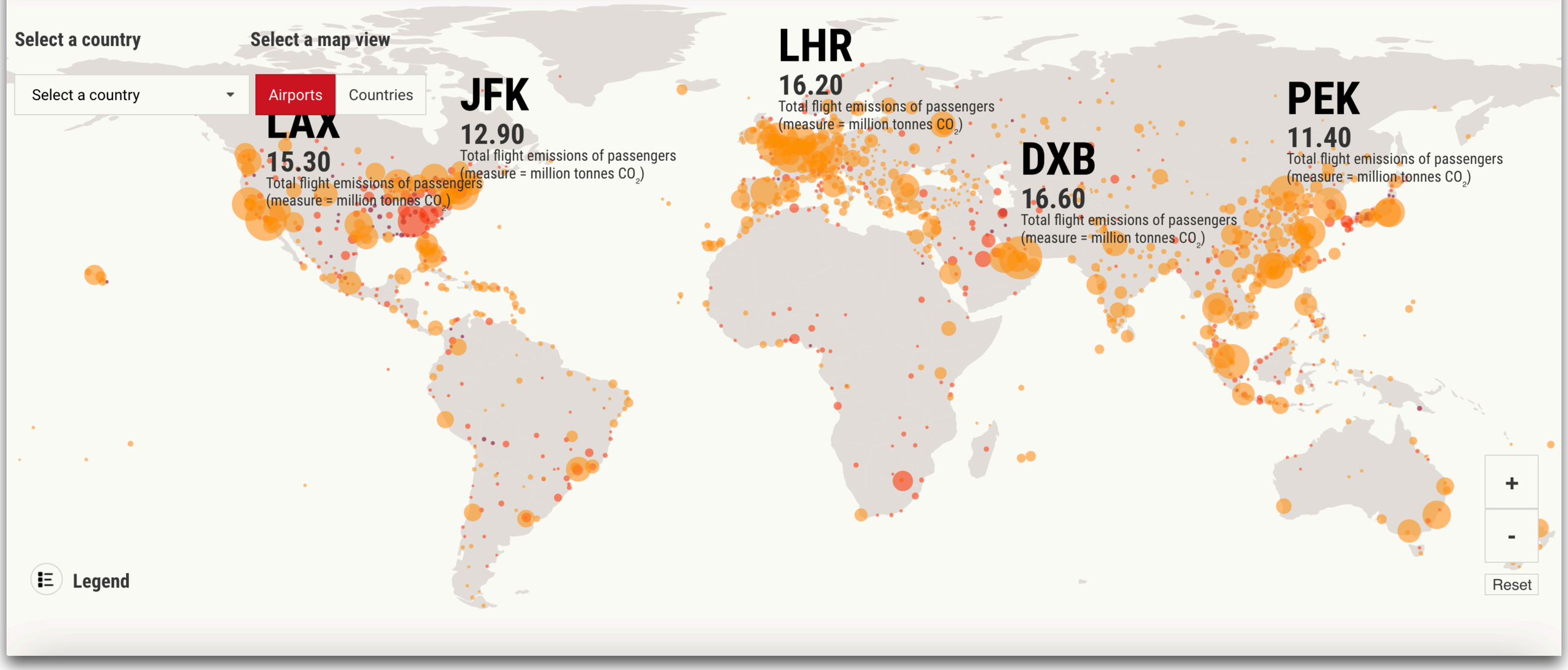
Our hope is that by providing this data we can provide policymakers and campaigners with robust estimates of the climate impact of existing and proposed airport capacity on a case-by-case basis and better understand how the aviation industry can fit in our planning for a climate-safe world.

The Tracker will evolve over time to include new data and information.

Airport Tracker

Aviation emissions uncovered

TRACKER ABOUT RESOURCES DATA REQUEST CONTACT US



SEPTEMBER 28, 2021

Europe's five biggest airports emit more than the whole of Sweden

A new airport tracker uncovers the true extent of aviation emissions

Airport Tracker

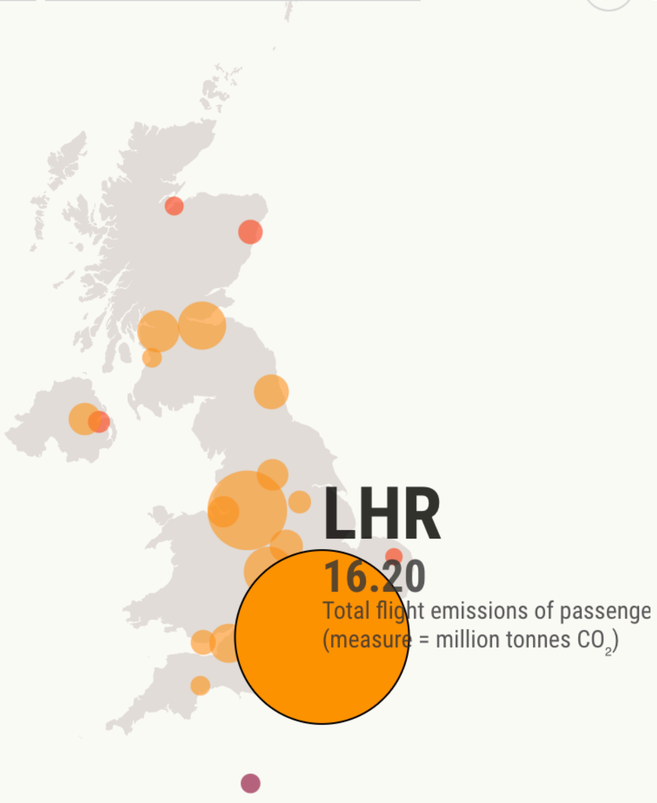
Aviation emissions uncovered

TRACKER ABOUT RESOURCES DATA REQUEST CONTACT US

Select a country United Kingdom

Select an airport LHR - London Heathrow

Legend



LHR

London Heathrow

#1 in United Kingdom

for total flight emissions of passengers

X

Total flight emissions of passengers ?

16.20

Measure = million tonnes CO_2

Total distance flown by fare-paying passengers ?

171.00

Measure = billion kms

Carbon emissions per passenger, per kilometer ?

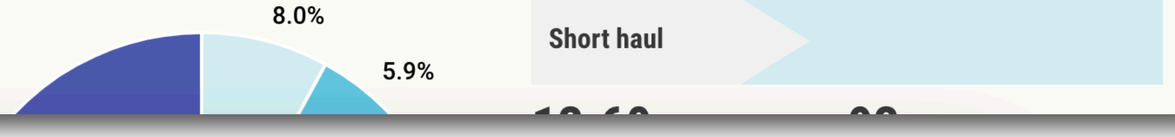
95

Measure = grams CO_2 per passenger km

Emissions from this airport are equivalent to the yearly emissions from

4 coal plants

Passenger traffic by distance flown



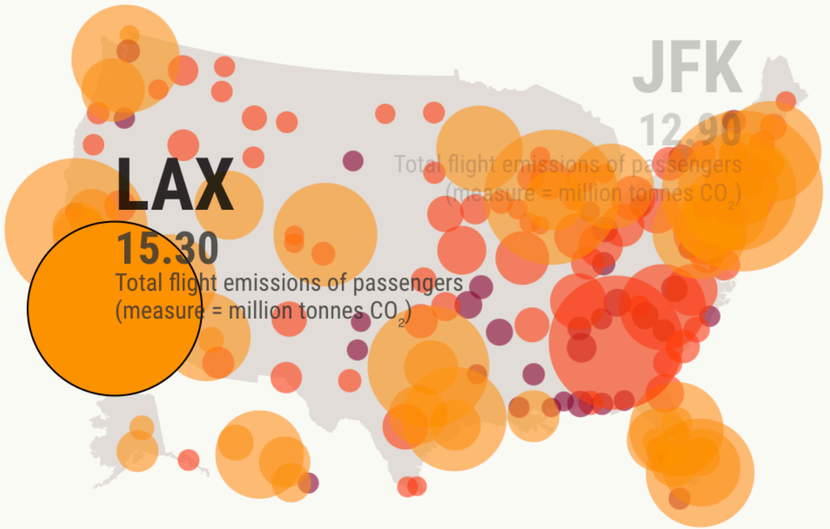
Airport Tracker

Aviation emissions uncovered

TRACKER ABOUT RESOURCES DATA REQUEST CONTACT US

Select a country United States

Select an airport LAX - Los Angeles



Legend

LAX

Los Angeles

#1 in United States

for total flight emissions of passengers

X

Total flight emissions of passengers ?

15.30

Measure = million tonnes CO_2

Total distance flown by fare-paying passengers ?

169.00

Measure = billion kms

Carbon emissions per passenger, per kilometer ?

91

Measure = grams CO_2 per passenger km

Emissions from this airport are equivalent to the yearly emissions from

4 coal plants

Passenger traffic by distance flown

Airport Tracker

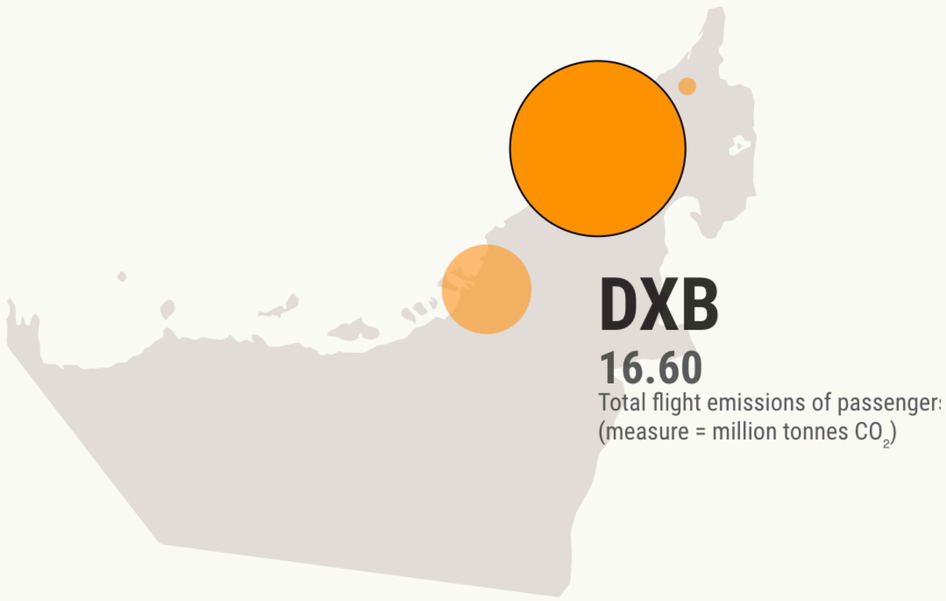
Aviation emissions uncovered

TRACKER ABOUT RESOURCES DATA REQUEST CONTACT US

Select a country: United Arab Emirates

Select an airport: DXB - Dubai

Legend



DXB

Dubai

#1 in United Arab Emirates

for total flight emissions of passengers

X

Total flight emissions of passengers ?

16.60

Measure = million tonnes CO_2

Total distance flown by fare-paying passengers ?

182.00

Measure = billion kms

Carbon emissions per passenger, per kilometer ?

91

Measure = grams CO_2 per passenger km

Emissions from this airport are equivalent to the yearly emissions from

4 coal plants

Passenger traffic by distance flown

Airport Tracker

Aviation emissions uncovered

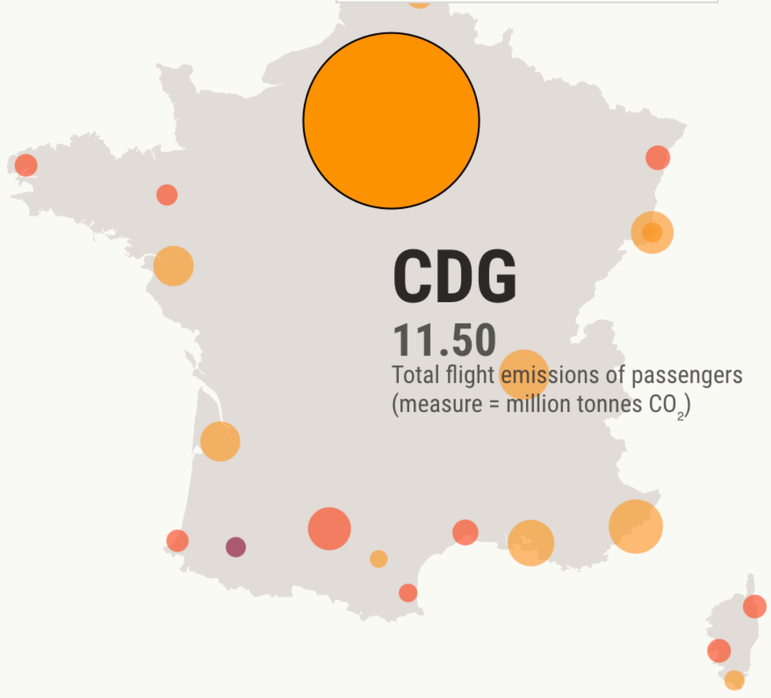
TRACKER ABOUT RESOURCES DATA REQUEST CONTACT US

Select a country

France

Select an airport

CDG - Paris Charles de Gaulle



Legend

CDG

Paris Charles de Gaulle

#1 in France

for total flight emissions of passengers

X

Total flight emissions of passengers ?

11.50

Measure = million tonnes CO_2

Total distance flown by fare-paying passengers ?

132.00

Measure = billion kms

Carbon emissions per passenger, per kilometer ?

87

Measure = grams CO_2 per passenger km

Emissions from this airport are equivalent to the yearly emissions from

3 coal plants

Passenger traffic by distance flown

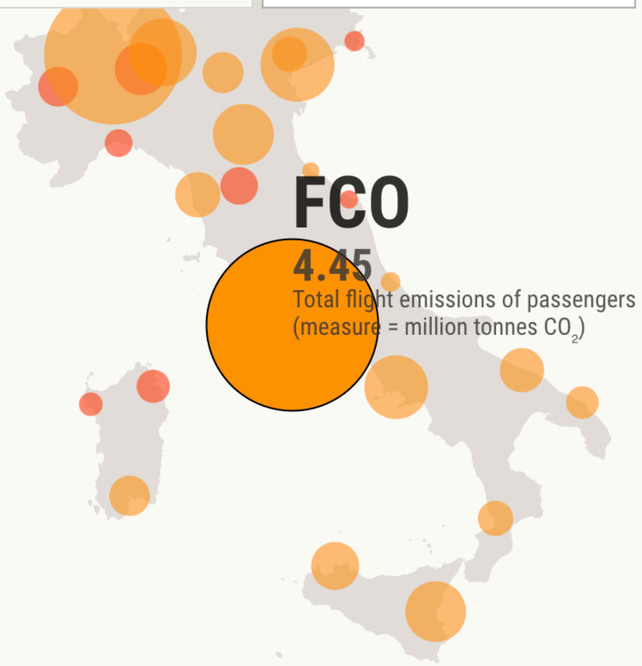
Le emissioni complessive in Italia valgono come tre centrali a carbone, 12,9 milioni di tonnellate di CO_2

Airport Tracker
Aviation emissions uncovered

TRACKER ABOUT RESOURCES DATA REQUEST CONTACT US

Select a country: Italy

Select an airport: FCO - Rome | Fiumicino



Legend

FCO

Rome | Fiumicino

#1 in Italy

for total flight emissions of passengers

X

Total flight emissions of passengers ?

4.45

Measure = million tonnes CO_2

Total distance flown by fare-paying passengers ?

50.10

Measure = billion kms

Carbon emissions per passenger, per kilometer ?

89

Measure = grams CO_2 per passenger km

Emissions from this airport are equivalent to the yearly emissions from

1 coal plants

Passenger traffic by distance flown

TRANSPORT & ENVIRONMENT

Challenges Discover Get Involved Subscribe

Lufthansa, BA, Air France were Europe's most polluting airlines pre-Covid

Three of the biggest recipients of airline bailouts - Lufthansa, British Airways and Air France - were the three biggest European airline emitters before the pandemic grounded flights, official data shows.[1] It is the first time ever that the total emissions of European airlines have been disclosed. Transport & Environment (T&E) and Carbon Market Watch (CMW), which compiled the data after being granted access by governments, are releasing it on the first anniversary of the European Commission approving pandemic aid to the aviation sector.

European airlines' total emissions in 2019

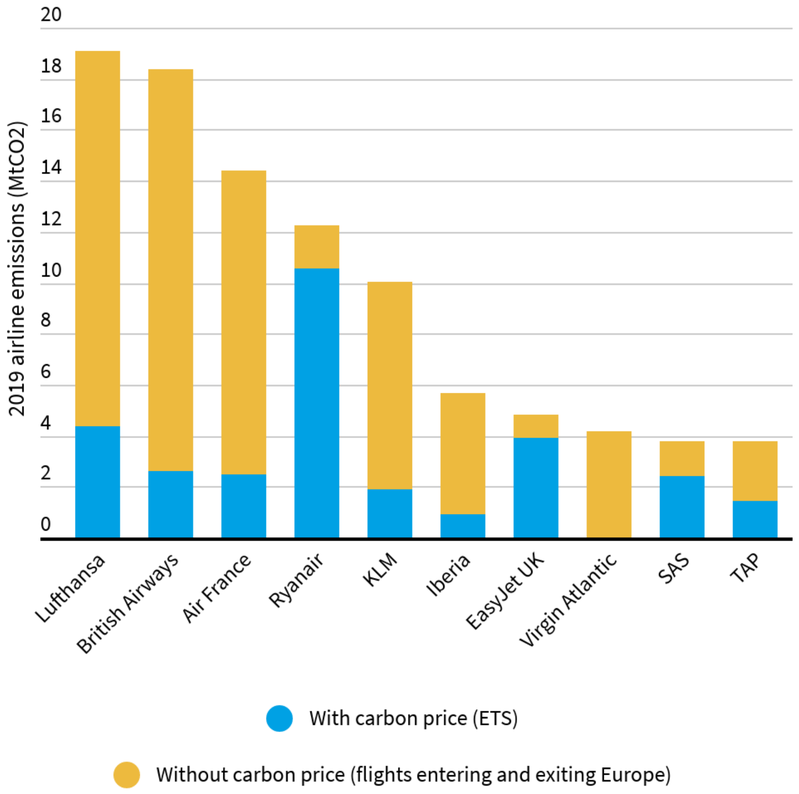
Rank	Country	Airline	Total emissions ($MtCO_2$)	Covid bailout received (€ million)
1	Germany	Lufthansa	19.11	6840*
2	UK	British Airways	18.38	2553
3	France	Air France	14.39	7000 (plus 3000 under discussion)
4	Ireland	Ryanair	12.28	670
5	Netherlands	KLM	10.03	3400 (plus 1000 under discussion)
6	Spain	Iberia	5.66	750
7	UK	EasyJet UK	4.83	2240
8	Italy	Alitalia	4.53	296.7
9	UK	Virgin Atlantic	4.15	0
10	Sweden	SAS	3.78	1130
11	Portugal	TAP	3.75	1200

*To calculate Lufthansa's bailout, we have removed the funds that it provided to its subsidiary airlines within Lufthansa Group

Note: T&E analysis of commercial aviation CO_2 emissions and Covid bailouts. Sources: publicly available bailouts information; CORSIA airline emission reports, provided by governments after Freedom of Information requests; in-house calculation of emissions based on ICAO emission calculator methodology, using AIS aircraft data purchased to PlaneFinder.

TRANSPORT & ENVIRONMENT transportenvironment.org Carbon Market Watch

Revealed: airlines don't pay for most of their pollution



Note: T&E analysis of commercial aviation CO_2 emissions. Sources: CORSIA airline emission reports provided by governments after Freedom of Information requests; in-house calculation of emissions based on ICAO emission calculator methodology, using AIS aircraft data purchased to PlaneFinder.

TRANSPORT & ENVIRONMENT transportenvironment.org

“Oggi il carburante utilizzato negli aerei non è tassato a livello europeo. Si paga una tassa quando si compra il carburante per la propria auto, si paga una tassa sul riscaldamento domestico, ma non si paga sul carburante che viene usato per i voli.
Questo è politicamente, socialmente e ambientalmente inaccettabile e deve cambiare”

Jo Dardenne, aviation manager Transport & Environment

Greenhouse gas emissions

UN chief urges airlines and shipping firms to do more to cut emissions

António Guterres says current efforts are more consistent with global heating 'way above 3C'

Fiona Harvey *Environment correspondent*

Thu 14 Oct 2021 16.38 BST

▲ António Guterres said current efforts to cut emissins would lead to catastrophic global heating. Photograph:

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Don’t sink Paris: Legal basis for inclusion of aviation and shipping emissions in Paris targets

September 2021

Fonte: T&E, 2021

Summary

There is some unwarranted confusion as to whether all shipping and aviation emissions are within the scope of the Paris Agreement. Many argue that the Paris Agreement articulates “economy-wide absolute emission reduction”, which clearly encompasses these sectors as vital parts of national economies. Others believe that these sectors are not subject to Paris because they are not specifically mentioned. To clear up the question, T&E has commissioned legal advice on the position of these sectors in the Agreement.

The legal analysis finds that the Paris Agreement has fundamental differences from the Kyoto Protocol, with the effect that these sectors are clearly subject to the obligations of the Paris Agreement and must be included in Parties’ Nationally Determined Contributions (NDCs). Unlike Kyoto, the central pillar of the Paris Agreement is a temperature goal. Parties are obligated to implement “economy-wide absolute emission reduction targets”, that is, to control anthropogenic emissions so that global warming is limited to well below 2°C and preferably stays within the limit of 1.5°C. A failure to address all anthropogenic emissions - including shipping and aviation - would violate the central aim of the Agreement.

But while the Paris Agreement is clear in this regard, related guidance documents have not fully integrated the new, temperature-based approach. In light of this legal clarification, three actions must be taken:

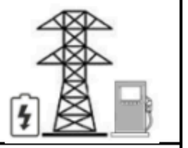
1. States should **revise their NDCs** to take into account all their shipping and aviation emissions;
2. **Amend or clarify paragraph 53 of decision 18/CMA** so that emissions from international aviation and shipping bunker fuel emissions are reported within (not separately from) national totals in NDCs;
3. **Update the 2006 IPCC Reporting Guidance** to include all aviation and shipping emissions as part of all other national emissions totals.

MINISTERO DELL'AMBIENTE
E DELLA TUTELA DEL TERRITORIO E DEL MARE

CATALOGO
DEI SUSSIDI AMBIENTALMENTE DANNOSI E DEI SUSSIDI AMBIENTALMENTE FAVOREVOLI 2018

ARTICOLO 68 DELLA LEGGE 28 DICEMBRE 2015, N. 221
("*DISPOSIZIONI IN MATERIA AMBIENTALE PER PROMUOVERE MISURE DI GREEN ECONOMY E PER IL CONTENIMENTO DELL'USO ECCESSIVO DI RISORSE NATURALI*")
DETTA COLLEGATO AMBIENTALE
(GU SERIE GENERALE N. 13 DEL 18-1-2016)

3.2.2.4 *Esenzione dall'accisa sui prodotti energetici impiegati come carburanti per la navigazione aerea diversa dall'aviazione privata e per i voli didattici*

Settore:	Energia 		
Nome del sussidio: [Codice CSA sussidio]	Esenzione dall'accisa sui prodotti energetici impiegati come carburanti per la navigazione aerea diversa dall'aviazione privata e per i voli didattici [EN.SI.04]		
Norma di riferimento:	Tabella A, punto 2, TUA (D.Lgs. 26 ottobre 1995, n. 504); art. 14, par. 1 (b) e par 2 della Direttiva 2003/96/EC (ETD).		
Co-finanziamento dall'UE:	No		
Anno di introduzione:	1993		
Anno di cessazione (ove prevista):	a regime		
Descrizione:	Esenzione dall'accisa sui prodotti energetici impiegati come carburanti per la navigazione aerea diversa dall'aviazione privata e per i voli didattici		
Tipo di sussidio:	Esenzione dall'accisa – Sussidio indiretto		
Aliquota:		Ordinaria:	Agevolazione:
kerosene uso carburazione:		€ 337,49 /1000 litri	Esenzione

Motivazione:

L'esenzione ha l'effetto di contenere i costi dei voli passeggeri e del trasporto merci per via aerea. Sotto il profilo ambientale, l'assenza di accisa sui prodotti energetici impiegati come carburanti per la navigazione aerea incentiva l'utilizzo dei carburanti di origine petrolifera (carboturbo o kerosene). La letteratura sugli impatti ambientali e sui costi esterni del trasporto aereo è vasta ed evidenzia rilevanti emissioni di gas serra e di inquinanti atmosferici associati all'uso dei carburanti petroliferi impiegati dal trasporto aereo, con relativi danni ambientali ed effetti sanitari di diverso genere (si veda: CE Delft, 2003; Impact, 2008; Ricardo - AEA, 2014).

Durante la presentazione della seconda edizione del Catalogo, è stato fatto presente che, per evitare di perdere competitività a livello internazionale nel settore aereo, tale esenzione dell'accisa sui prodotti energetici impiegati come carburanti debba essere riformata attraverso accordi internazionali. Dal punto di vista ambientale, l'esenzione rimane poco giustificata.

	2015	**2016**	**2017**	**2018**	**2019**
Effetto finanziario (mln €):[213]	1.581,1	1.681,6	1.807,3	1.807,3	1.807,3

Focus 3 – International Civil Aviation Organization (ICAO) e International Maritime Organization (IMO)

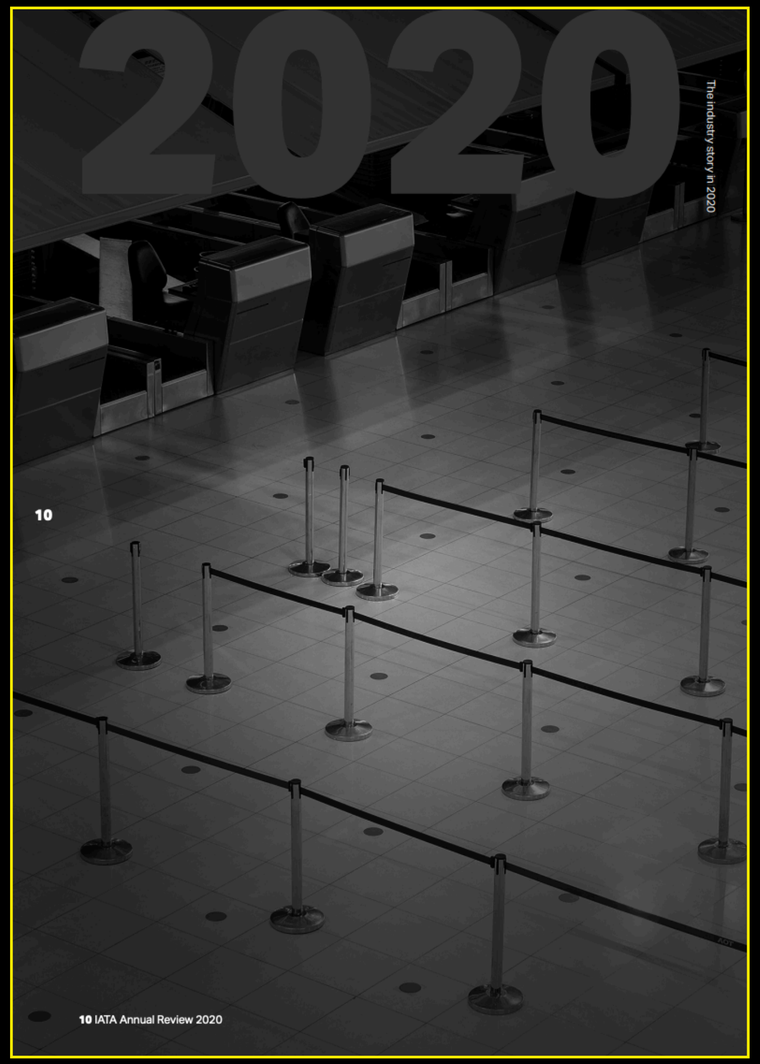
Come noto, le emissioni di gas serra del trasporto aereo e marittimo internazionale non hanno trovato esplicita menzione nell'ambito del testo dell'accordo di Parigi (le previsioni su ICAO e IMO contenute nei testi preparatori sono state stralciate durante la Conferenza). Eppure, ai sensi dell'accordo, tutti i settori dell'economia che sono fonti di gas serra dovranno fare la loro parte per la riduzione o limitazione delle emissioni.

L'ambizione degli impegni sottoscritti con l'Accordo di Parigi non riduce la pressione, sia a livello internazionale che all'interno dei singoli Stati, volta al coinvolgimento di questi due settori nelle politiche di riduzione delle emissioni climalteranti. Inoltre, le politiche in atto a livello internazionale orientate alla riduzione dei sussidi ai combustibili fossili nei diversi settori d'impiego, evidenziano la necessità di valutare la possibilità di eliminare le esenzioni fiscali vigenti anche nei due settori dell'aviazione e del trasporto marittimo, ricorrendo a un approccio graduale e inizialmente circoscritto a specifici ambiti, in relazione ai diversi spazi di riformabilità del sussidio.

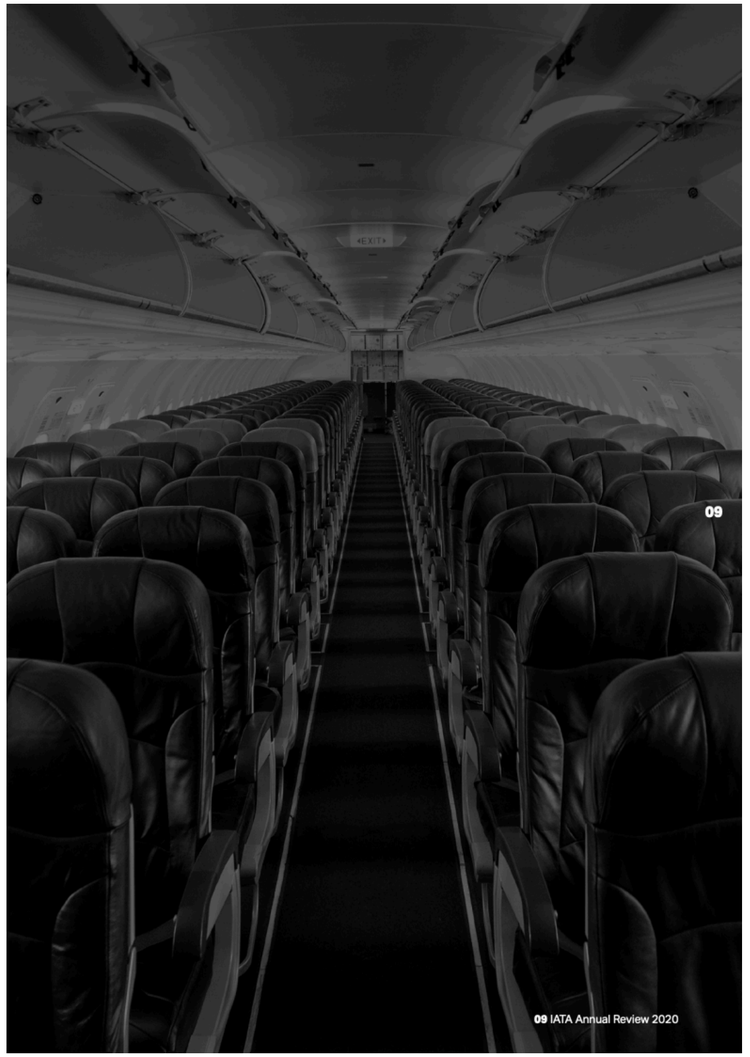
Nella normativa nazionale, il Testo Unico sulle Accise (TUA) esenta il trasporto aereo (Tabella A, punto 2) e quello marittimo (Tabella A, punto 3) dall'applicazione del livello normale delle accise sui prodotti petroliferi. Entrambe le esenzioni costituiscono sussidi (categoria delle spese fiscali) e, anche alla luce dell'accordo di Parigi, non trovano giustificazioni sotto il profilo dell'equità ambientale (tutti i carburanti impiegati nei trasporti terrestri, su strada e ferroviari, sono assoggettati ad accise).

Va sottolineato che entrambe le esenzioni sono attualmente applicate in Italia sia ai viaggi domestici (fra due porti/aeroporti nazionali, o con partenza e arrivo nel medesimo porto nazionale) che ai viaggi intra-comunitari e internazionali (extracomunitari).

L’esenzione di fatto dei carburanti del trasporto marittimo e aereo introduce un vantaggio ingiustificato per quei settori produttivi e quei consumatori che li utilizzano, creando una situazione di privilegio ingiustificato. E’ auspicabile una riflessione seria sulle azioni da intraprendere a livello internazionale per restaurare condizioni di mercato eque, trasparenti e concorrenziali.


2020
The industry story in 2020
10
10 IATA Annual Review 2020

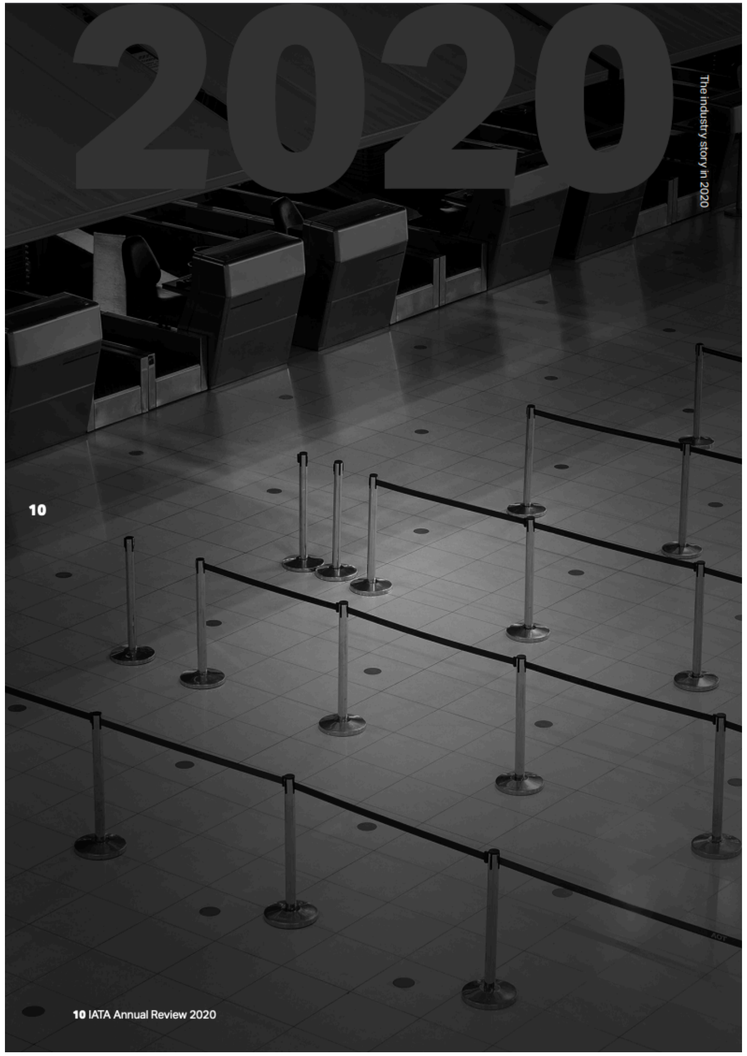

09
09 IATA Annual Review 2020



2020

Aviation is in crisis.

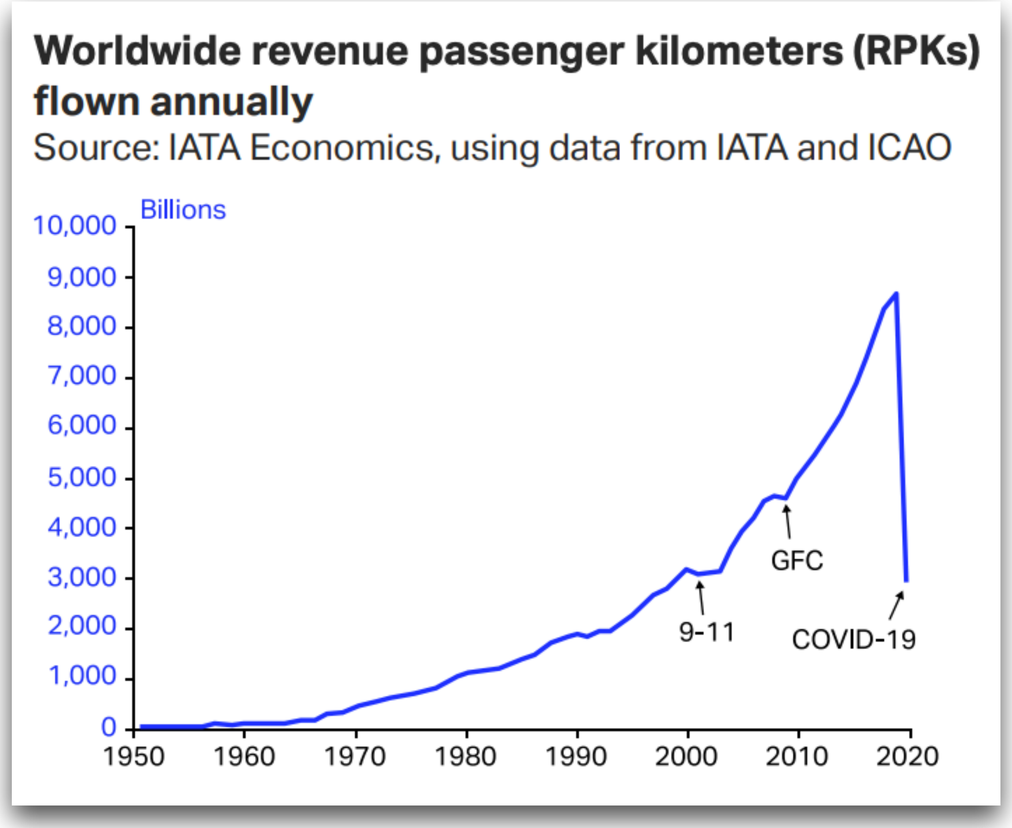
This is the most profound de-connecting of modern society since World War II.

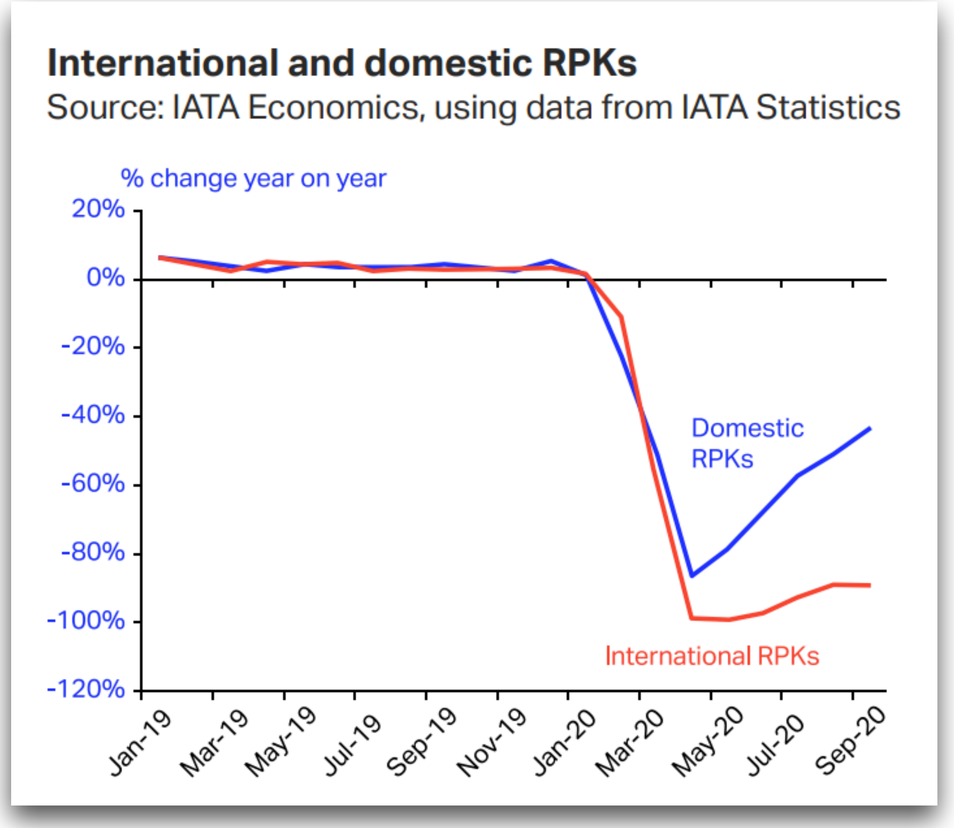


City pair connections in April 2020

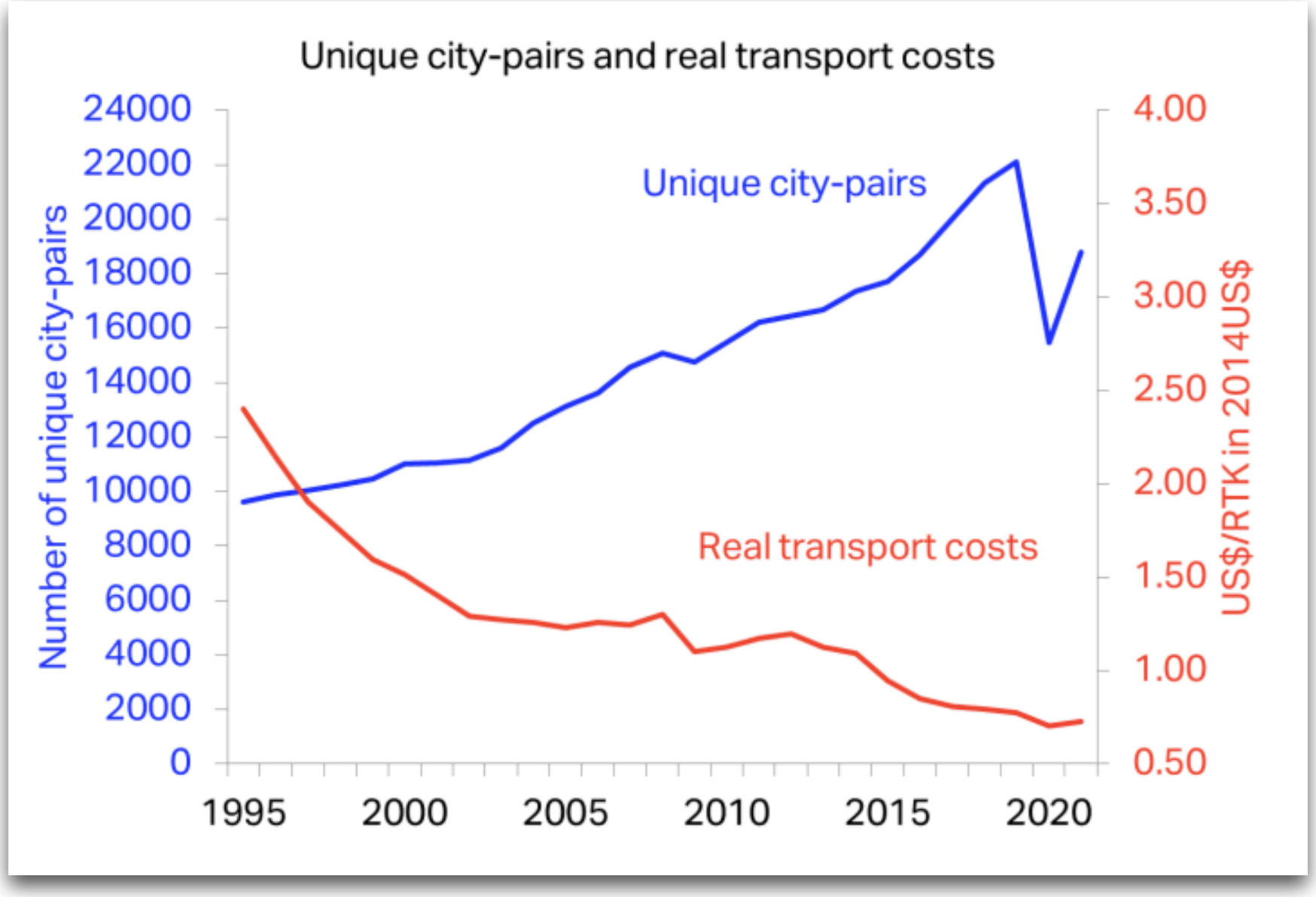
Source: IATA Economics, using data under license from Flight Radar 24

Fonte: IATA, Annual report, 2020





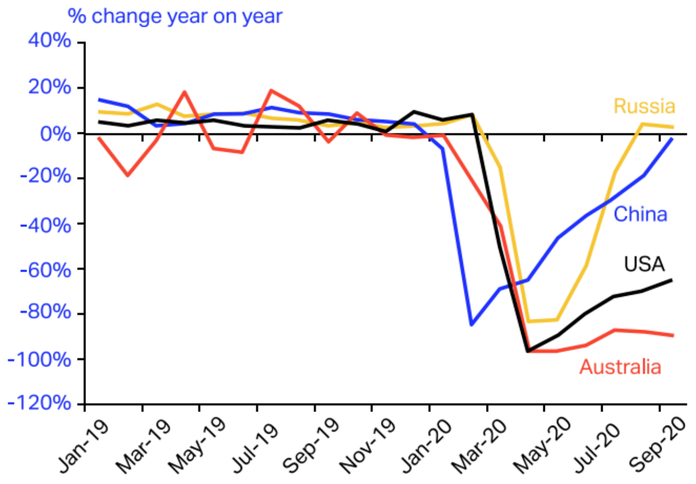
Fonte: IATA, Annual report, 2019



Fonte: IATA, Annual report, 2019

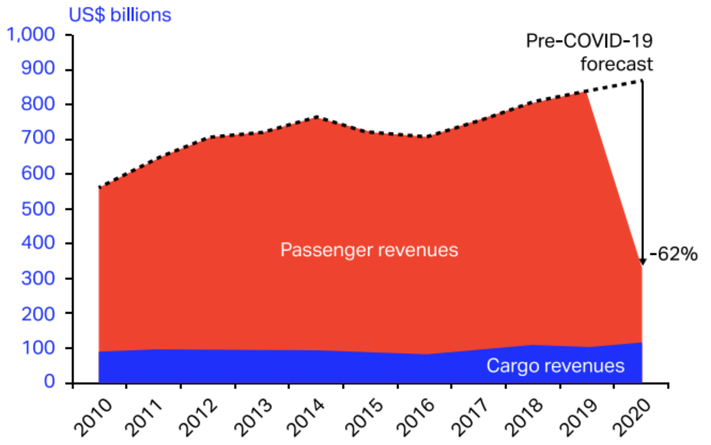
Domestic RPKs

Source: IATA Economics, using data from IATA Statistics



Airline revenues more than 60% below precrisis forecast

Source: IATA Economics

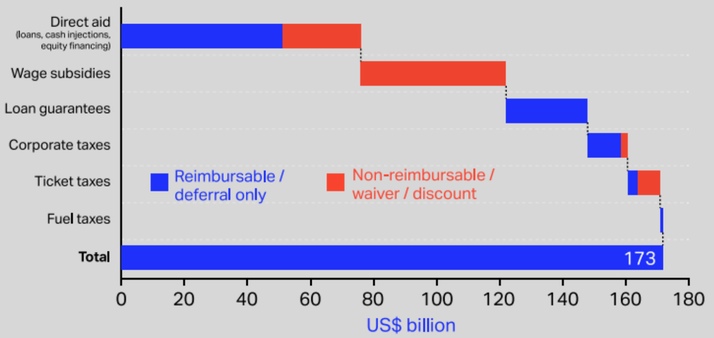


Government aid has kept airlines on life support in 2020

Given the scale of the air transport industry's unprecedented loss, many airlines would have failed if not for government aid. In fact, only where government support was minimal, such as in Latin America, have there been failures or restructurings under bankruptcy. In North America, Europe, and parts of Asia, airlines received substantial cash injections from governments. Total aid for airlines in 2020 amounts to about $173 billion and came in various forms. More than half is deferred debt or payments that will need to be reimbursed as the industry tries to recover.

Government aid to airlines, by type

Source: IATA Economics, using using public information and data from SRS Analyser, DDS, FlightRadar 24, TTBS, ACIC, *The Airline Analyst* annual reports regarding government measures

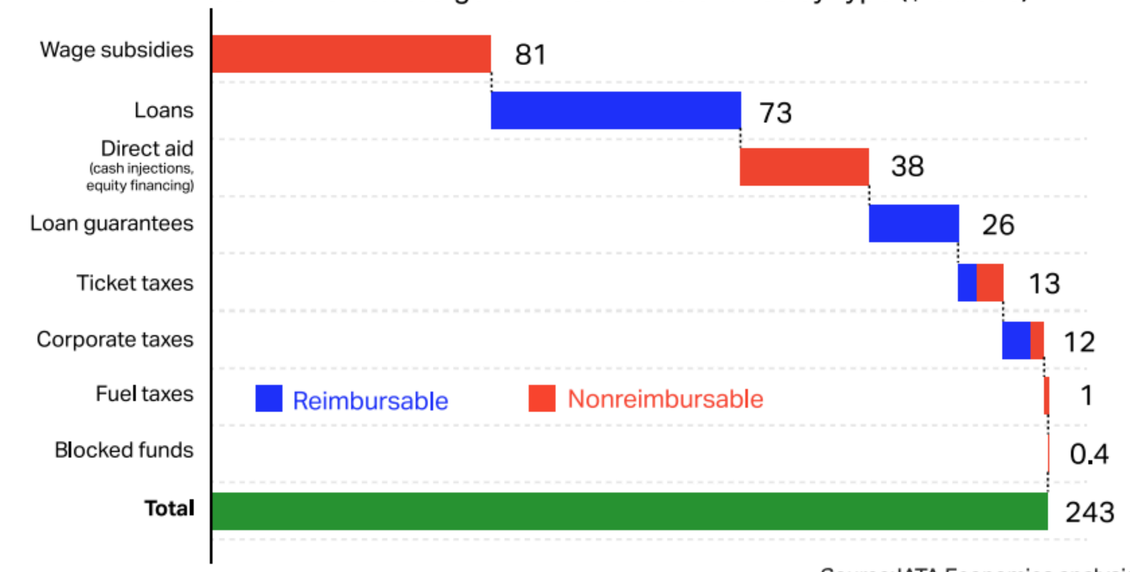


Government aid

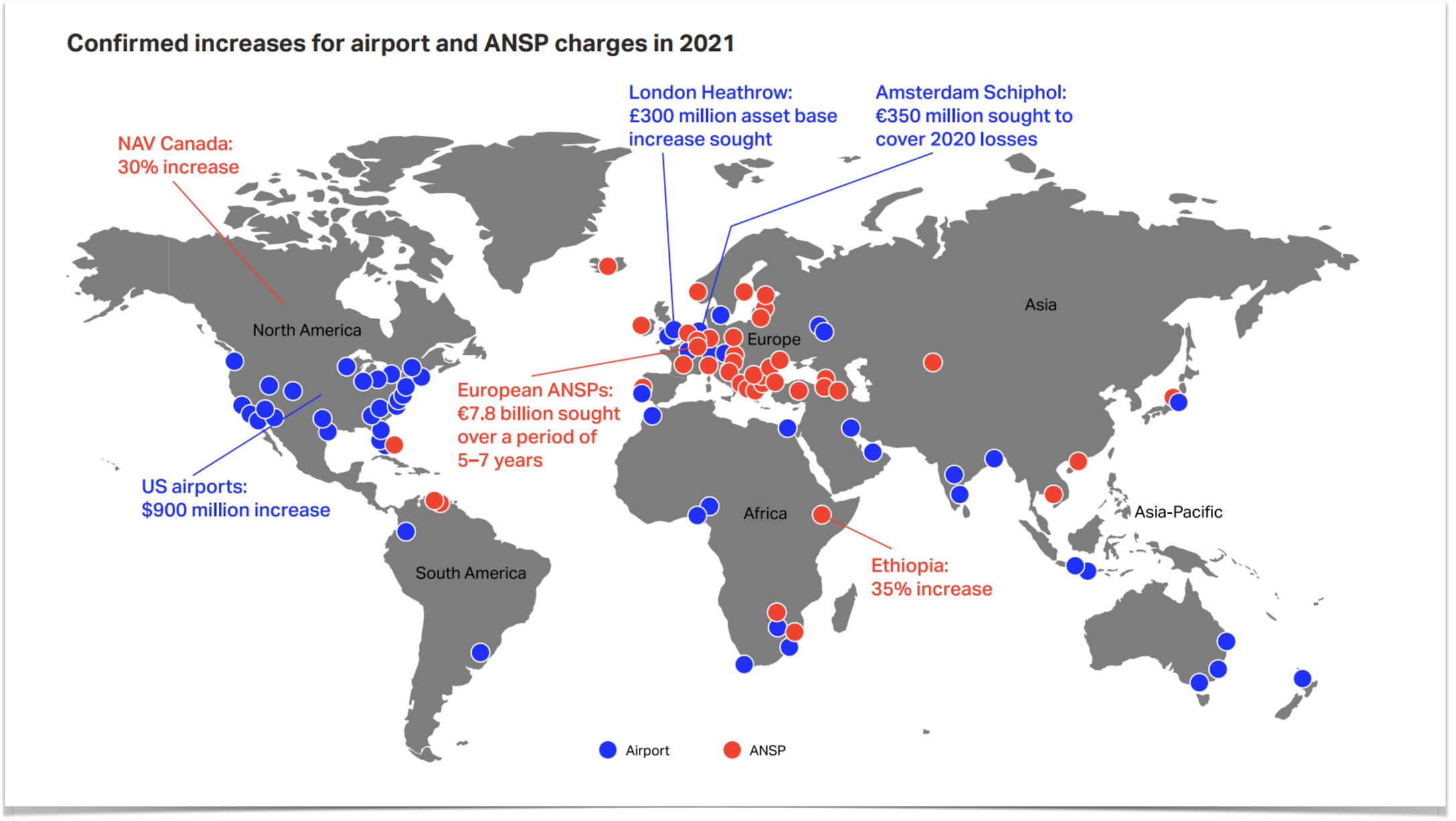
Figure 1 below shows the importance of the wage assistance provided by governments to the industry. Wage assistance accounts for $81 billion of the $230 billion provided since the start of the pandemic, more than two-thirds of which has gone to the sector in the United States. Most of the remaining aid has been loaned to airlines, raising their debt. In direct aid, only $38 billion is nonreimbursable, compared with the $73 billion that must be repaid. Some 68% of the aid funds overall are reimbursable, which is a significant debt burden on the industry.

The regional spread of the aid (Figure 2) shows that the bulk of it has gone to North America, principally for wages. European governments have offered more direct cash and loans. The disparity is clear. Little aid has gone to airlines in developing regions.

Figure 1 COVID-19–related government aid to airlines by type ($ billions)

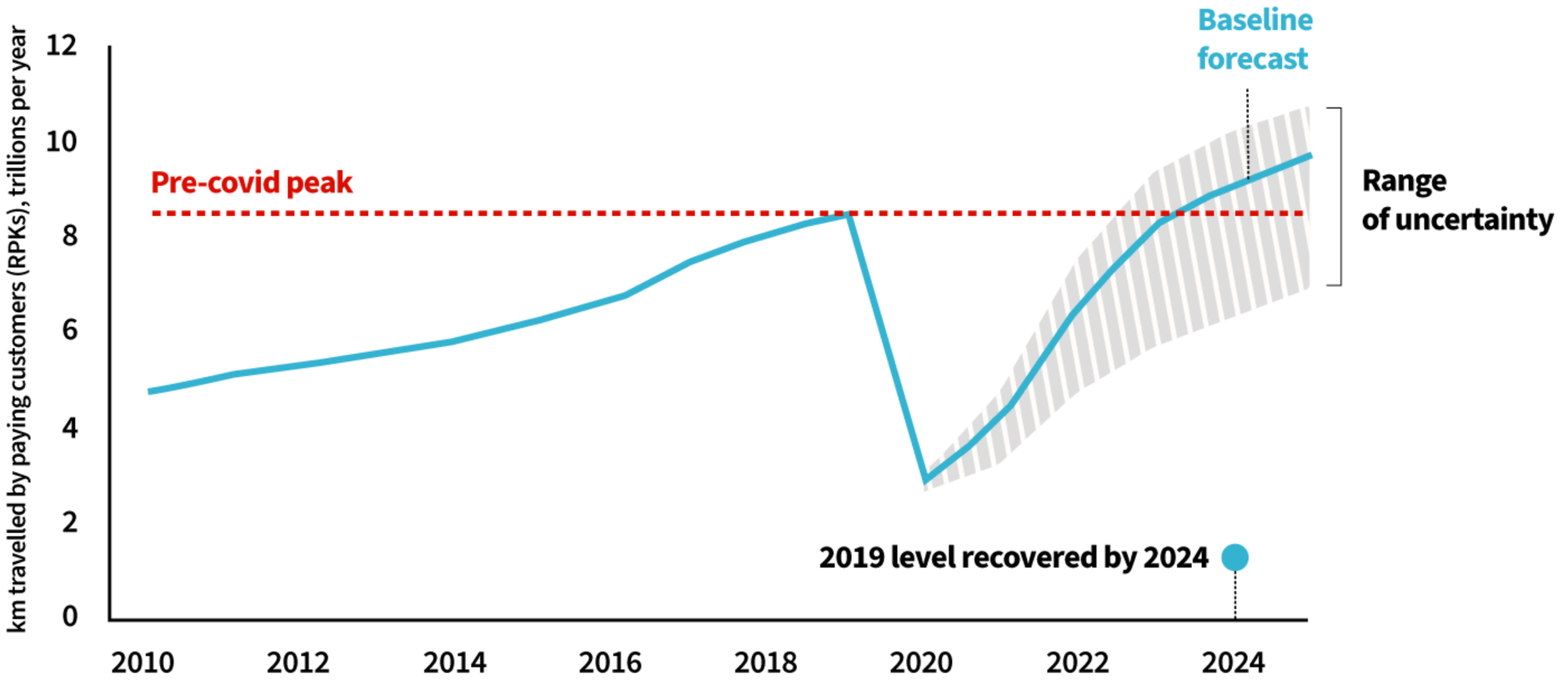


Source: IATA Economics analysis



Fonte: IATA, Annual report, 2021

Air travel is forecasted to return to peak by 2024



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Source: IATA/ Tourism Economics 'Air Passenger Forecasts' October 2020