



Supporting  
European  
Aviation



## Keynote Speech

# Vision and Challenges of Aviation in the Next Decade

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Director General

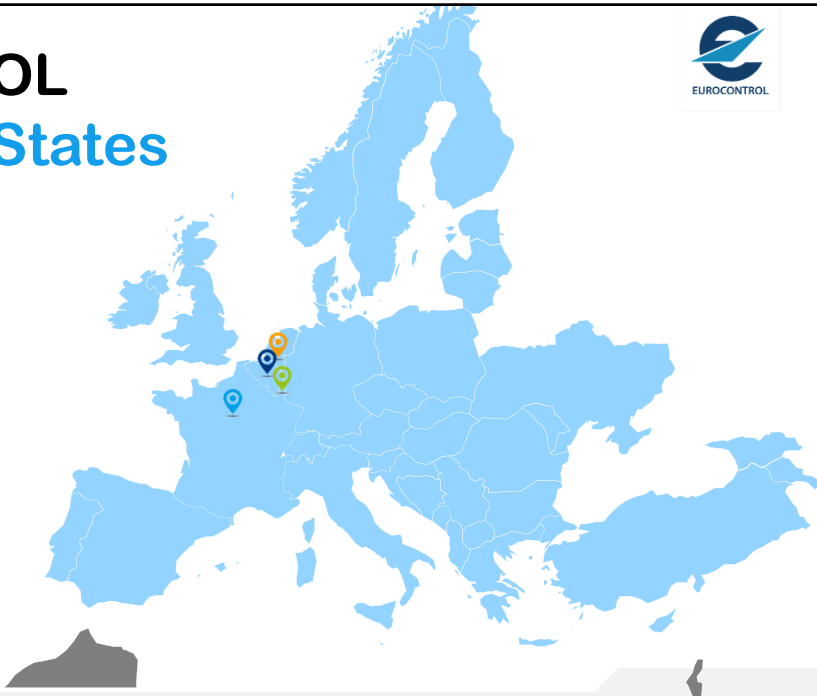
16 March 2021



## EUROCONTROL 41 x Member States + Morocco and Israel

### EUROCONTROL Office Locations

-  **BELGIUM**  
Brussels (HQ & ATM Network)
-  **NETHERLANDS**  
Maastricht (MUAC ANSP)
-  **FRANCE**  
Brétigny-sur-Orge (Research Centre)
-  **LUXEMBOURG**  
Luxembourg (Training Centre)



# EUROCONTROL's CENTRAL ROLE For European Aviation



Air Traffic Network Manager for all of Europe 11.1 million flights 2019, **5 million in 2020**

ATC Financing - €10 billion p.a. **5.1 billion in 2020**

Maastricht Air Navigation Service Provider

Civil-Military coordination

Pan-European aviation technical support



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## Headlines

- 8,698 flights (33% of 2019 levels) on Sunday 14 March 2021.
- March traffic slightly decreasing within Network over 2 weeks (-1%, -132 flights).
- Positive trend since mid-February, stabilizing over the last week.
- Strong increase for Turkey and strong decrease for France (mainly domestic for both).
- All cargo (+10% vs 2019). Low carriers back in the top 10 (weekend effect).
- Domestic traffic: Europe (-71%), US (-39%), China (+4%), Middle East (-44%).

## Top 10 Aircraft Operators on Sun 14 March 2021 (daily flights)

1. Turkish Airlines	Operated 712 flights ↓44% of same day in 2019 ↑15% over 2 weeks
2. Air France	Operated 381 flights ↓62% of same day in 2019 ↑5% over 2 weeks
3. Pegasus	Operated 299 flights ↓35% of same day in 2019 ↑24% over 2 weeks
4. Lufthansa	Operated 280 flights ↓80% of same day in 2019 ↑8% over 2 weeks
5. KLM	Operated 251 flights ↓61% of same day in 2019 ↑13% over 2 weeks
6. Widerøe	Operated 222 flights ↓15% of same day in 2019 ↑6% over 2 weeks
7. easyJet	Operated 204 flights ↓88% of same day in 2019 ↑17% over 2 weeks
8. SAS	Operated 194 flights ↓76% of same day in 2019 ↑13% over 2 weeks
9. Ryanair	Operated 191 flights ↓91% of same day in 2019 ↑4% over 2 weeks
10. Wizz Air	Operated 181 flights ↓66% of same day in 2019 ↑2% over 2 weeks

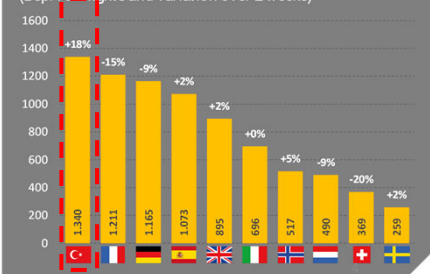
## Traffic Situation Daily flights (including overflights)



Traffic over the last 7 days is

**↓66%** Compared to equivalent days in 2019

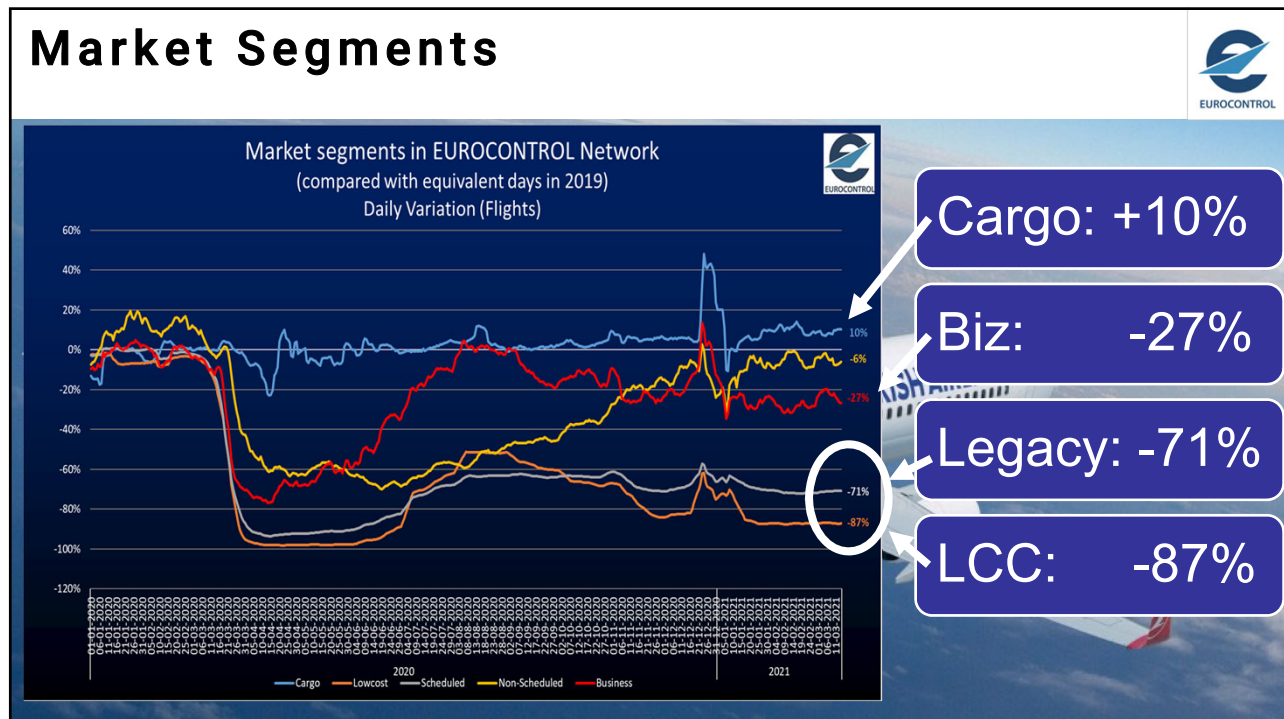
## Top 10 Busiest States on Sun 14 March 2021 (Dep/ Arr flights and variation over 2 weeks)



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Rank evolution over 2 weeks	Top 10 States on Sun 14-03-2021					EUROCONTROL
	State	Flights (Dep/Arr)	Δ over 2 weeks	% over 2 weeks	% vs 2019	
↑	Turkey	1340	↑ +200	+18%	↓ -42%	
↓	France	1211	↓ -212	-15%	↓ -67%	
↓	Germany	1165	↓ -111	-9%	↓ -76%	
→	Spain	1073	↑ +19	+2%	↓ -74%	
→	United Kingdom	895	↑ +16	+2%	↓ -83%	
→	Italy	696	↑ +2	+0%	↓ -77%	
↑	Norway	517	↑ +26	+5%	↓ -56%	
↓	Netherlands	490	↓ -46	-9%	↓ -68%	
→	Switzerland	369	↓ -92	-20%	↓ -73%	
↑	Sweden	259	↑ +5	+2%	↓ -74%	

## Market Segments



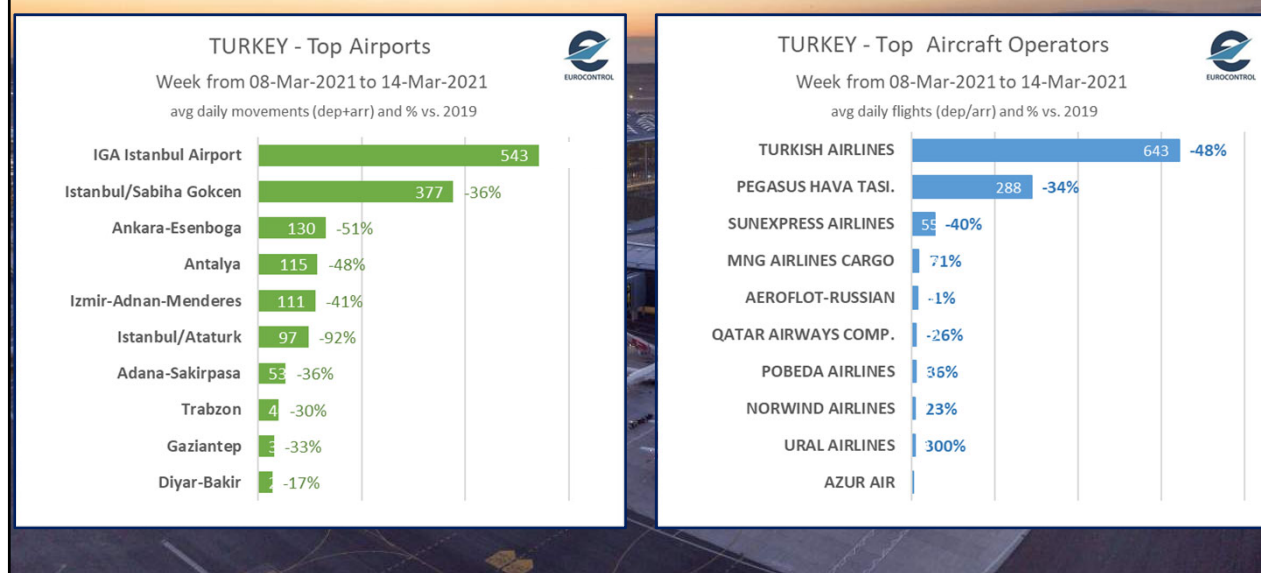
## Airports (Daily Departure/Arrival flights)

Top 10 and latest news



Rank evolution over 2 weeks	Top 10 Airports on Sun 14-03-2021					EUROCONTROL
	Airport	Dep/Arr Flights	Δ over 2 weeks	% over 2 weeks	% vs 2019	
→	IGA Istanbul Airport	589	↗ +75	+15%	Not appl	
↗	Frankfurt	496	↗ +21	+4%	↘ -63%	
↗	Paris/Charles-De-Gaulle	432	↘ -25	-5%	↘ -65%	
↘	Amsterdam	428	↘ -64	-13%	↘ -68%	
↗	Istanbul/Sabiha Gokcen	383	↗ +52	+16%	↘ -37%	
→	London/Heathrow	370	↗ +13	+4%	↘ -72%	
↘	Madrid/Barajas	359	↘ -12	-3%	↘ -67%	
→	Oslo/Gardermoen	215	↗ +11	+5%	↘ -68%	
↗	Athens	189	↗ +4	+2%	↘ -61%	
↗	Zurich	185	↗ +3	+2%	↘ -74%	

## Turkey: Top Airports & Airlines



## Worldwide/Europe Flows



### Europe

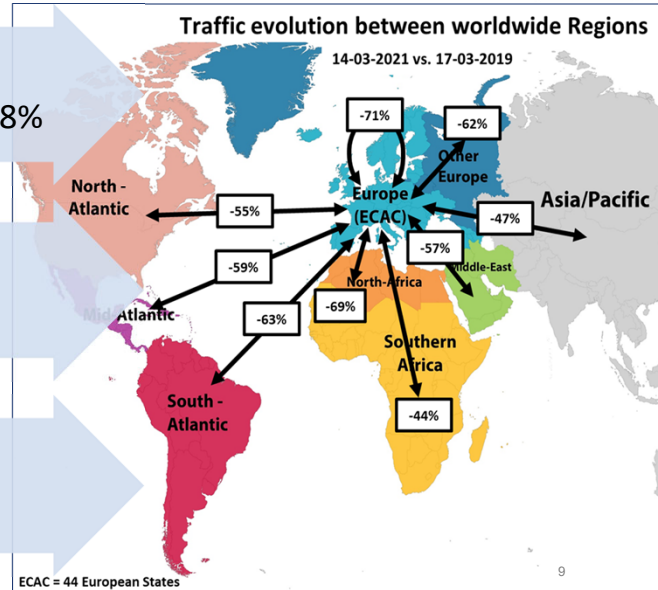
- Intra-Europe: -71%
- Intercontinental: -58%



- Domestic: -39%
- International: -47%

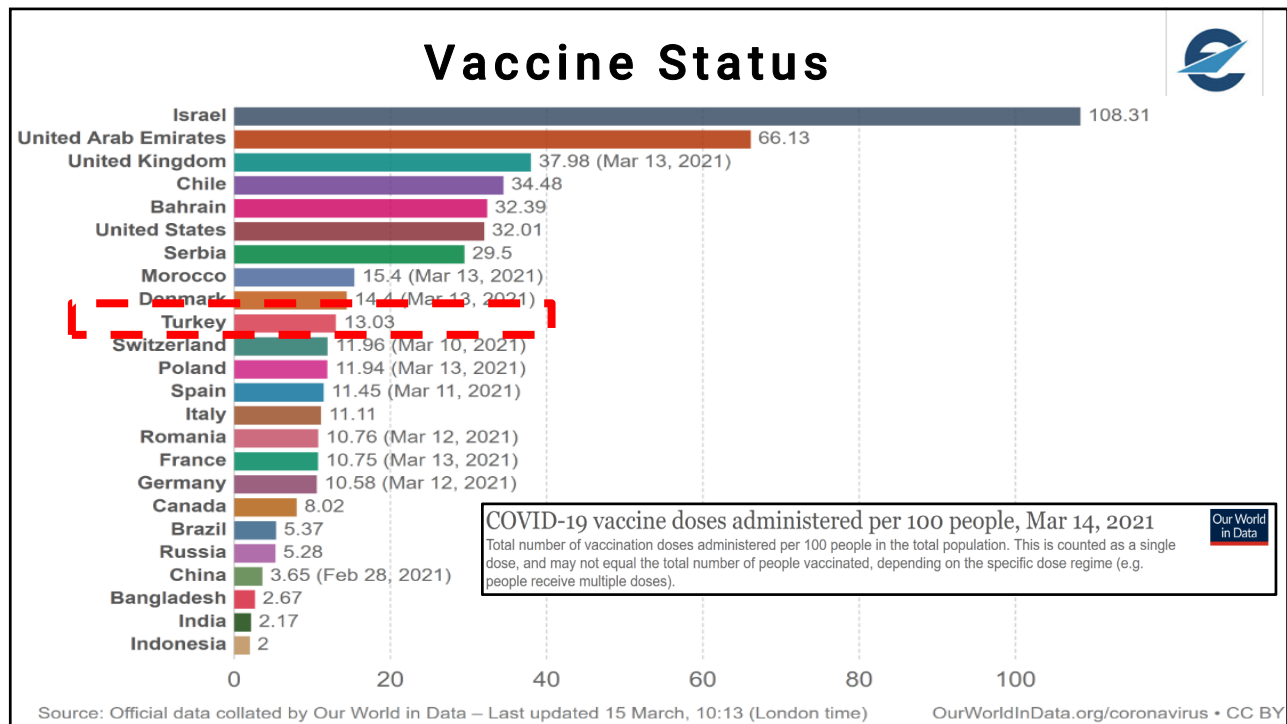


- Domestic: +4%
- International: -63%



What lies  
ahead





### The Sunday Telegraph

**Vaccine for all adults by July as hope is raised for holidays**

### The Brussels Times

**EU divided on Covid-19 'vaccination passports' for travel**

### NEWS

**COVID Vaccine Passports Announced by Israel in World First**

### CBC NEWS

**Mandating 'vaccination passports' for access to services, travel would be a violation of civil liberties**

### REUTERS

**Sweden plans for digital coronavirus**

### DAILY SABAH

**Turkey to vaccinate 50 million people against COVID-19 before fall**

### Denmark's

**Denmark adjusts expected date for completion of Covid-19 vaccination programme**

### EU/Schengen

**List of EU Countries Issuing/Asking for Vaccination Certificates**

### PAS

**Inch Closer in Europe, But Backlash Mounting**



**Will we fly back again?**

An aerial photograph of a white commercial airplane parked on a tarmac. Red dashed lines form a rectangular frame around the aircraft. In the background, there are ground service equipment and other aircraft parts.

## **EUROCONTROL STATFOR 5-year forecast for Europe 2020-2024**

**Next decade will be digital and greener**

Three large, overlapping circles in blue, green, and light blue are positioned over a background image of a runway at sunset. The blue circle on the left contains the text 'MARKET & COMPETITION CHANGED'. The green circle in the middle contains the text 'DECARBONISATION OF AVIATION'. The light blue circle on the right contains the text 'INNOVATION & DIGITALISATION'.

**MARKET &  
COMPETITION  
CHANGED**

**DECARBONISATION  
OF AVIATION**

**INNOVATION  
&  
DIGITALISATION**

# Aviation Centre of Gravity



**Shifting  
Eastwards**

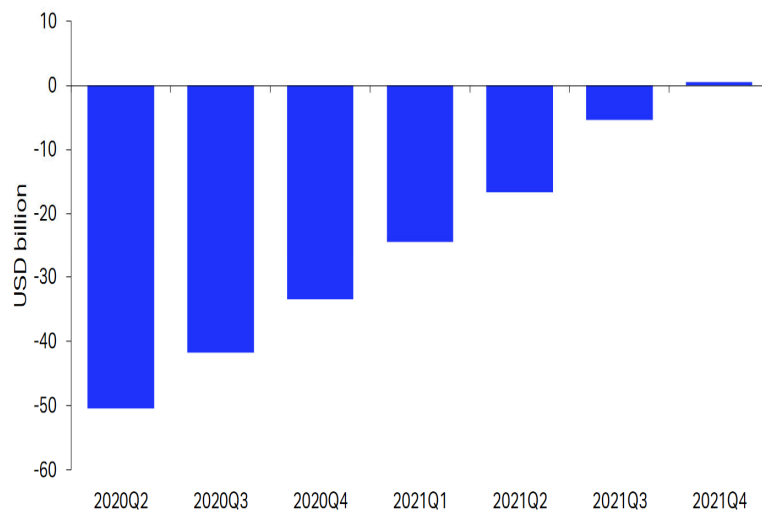
**2019 Forecast  
Accelerated by  
COVID-19**



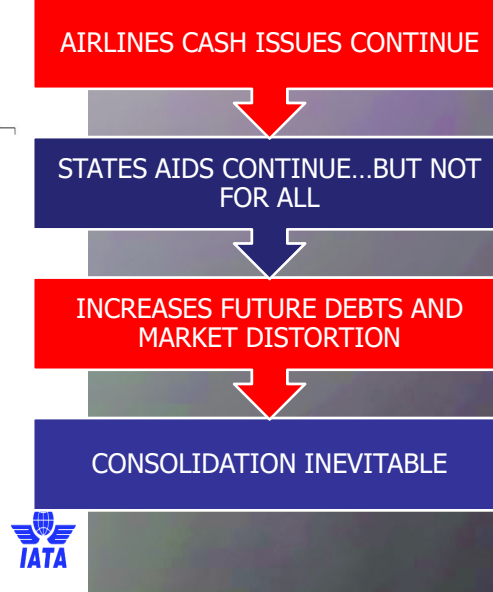
## Competition distorted



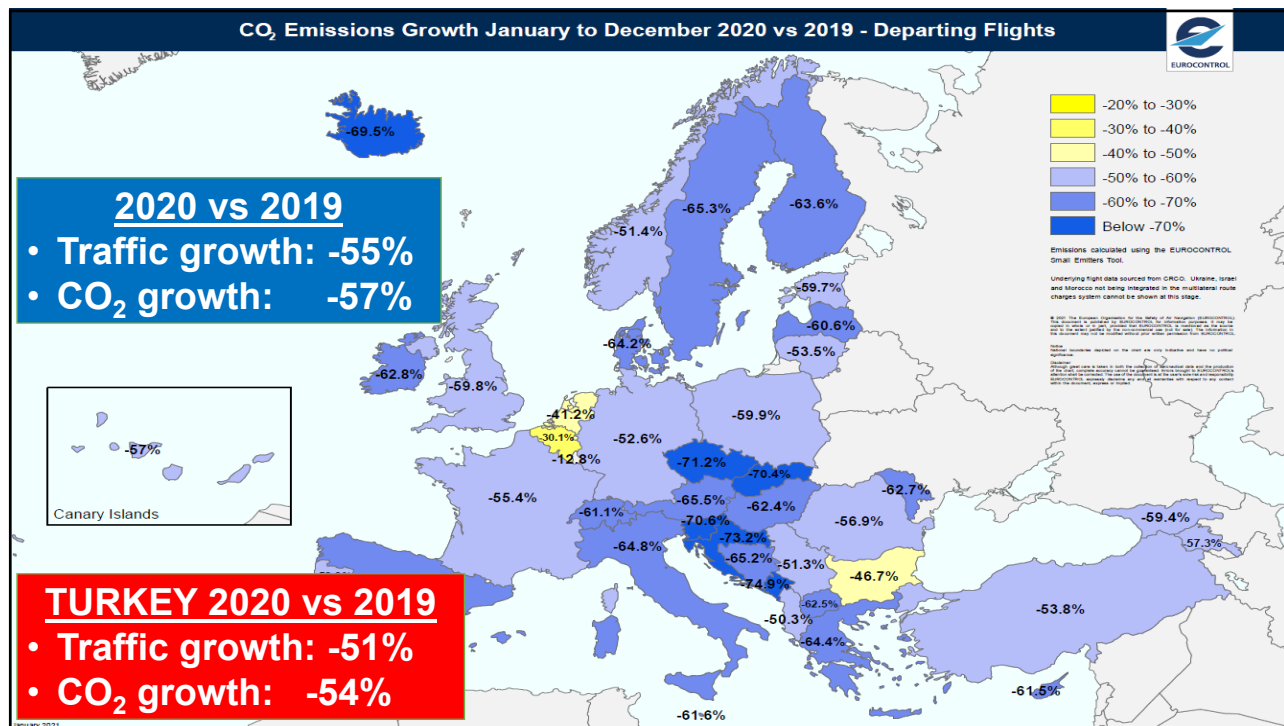
Airline industry quarterly cash burn forecast



Source: IATA Economics







# Aviation Sustainability: tools & monitoring

**EUROCONTROL Data Snapshot**  
CO<sub>2</sub> emissions from flights declined by 57% in 2020, but with considerable variation between States

26 January 2021

Departing flights: -54.5%  
CO<sub>2</sub> emissions: -56.9%

Canary Islands

Travel restrictions due to the COVID-19 pandemic led to much-reduced CO<sub>2</sub> emissions from down 56.9% in 2020 following global standards, as CO<sub>2</sub> emissions from a flight are average. These departing flights declined by a similar amount to 54.5% compared to 2019.

The map shows that there was considerable variation between countries in their CO<sub>2</sub> reduction in the local fleet (lighter or heavier, younger or older aircraft), flight distances (shorter segments Europe, scheduled, business aviation etc.), and by the extent of the COVID-19 impact. For example, in Belgium departing flights were down by about half in 2020, similar to however, was down only 30%. A major reason for this was the high proportion of cargo which increased from 11% to 25% in 2020 compared to 2019. Cargo flights use larger aircraft which generate above average CO<sub>2</sub> emissions. A second reason was the high proportion of cancellations, the average scheduled flight was much longer than in 2019, so emissions per flight were higher.

Technical Note: Underlying flight data sourced from EUROCONTROL Central Route Charges Office (CRCO). The CO<sub>2</sub> emissions reported from EUROCONTROL Member States using the aircraft type and route. At Israel, Morocco and Slovakia, changes were not reported.

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**AVIATION SUSTAINABILITY BRIEFING**

News and views on how we can make aviation sustainable together

**Airbus fello'fly**

Reducing fuel consumption up to 10%

With the promise of reducing fuel consumption by up to 10% per follower flight, Airbus' cutting edge fello'fly project is currently one of the most exciting aviation sustainability projects. Inspired by the flight of migratory birds, which fly together to save energy, two aircraft are set to make and fly in formation. The follower aircraft will receive the energy field by the leader of a leader aircraft, by flying in the smooth wake air of air it creates and thereby significantly reducing emissions on long haul flights. If the fello'fly demonstration project were to be put into operational use and all wide-body aircraft were equipped with wake energy sensing technology, it is estimated that fello'fly could eliminate over 1.5 million tons of industry CO<sub>2</sub> emissions annually. Considering that the long-haul aviation segment is the most difficult to decarbonise, this would be a significant achievement.

Read our top story on page 3

Can Sustainable Aviation Fuels decarbonise aviation?  
Read the story on page 4

Transforming the aviation fuel sector:  
We spoke to Jonathan Wood, President Sustainable Aviation.  
Read our interview on page 8

EUROCONTROL's work on sustainability  
Read more on page 11

Aviation Sustainability: Developments from around the world  
Read more on page 15

**+8.6% to 11.2% EXCESS FUEL consumption**  
compared to the most fuel efficient flights in Europe.

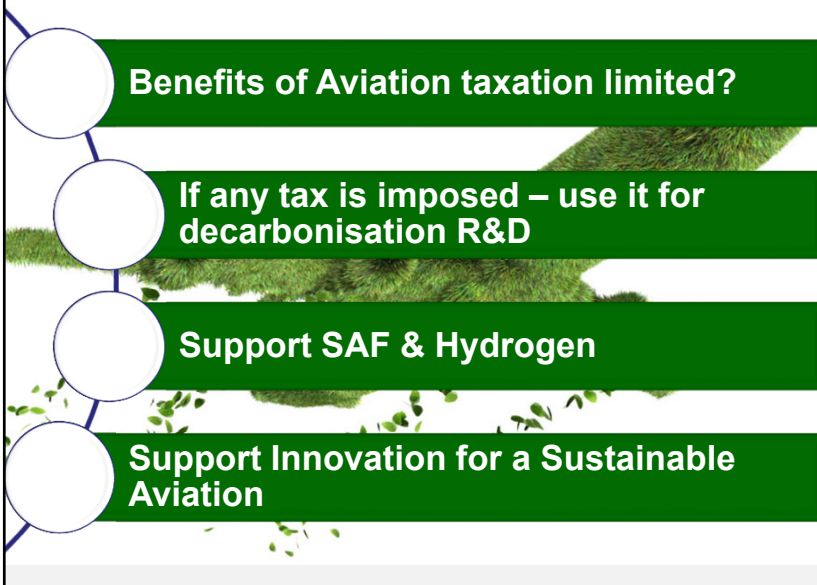
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SESAR

NETWORK MANAGER

# Aviation Decarbonisation Debate



**Aviation Intelligence Unit**  
Think Paper #7 - September 2020

**Does taxing aviation really reduce emissions?**

Headlines such as "Airlines have enjoyed a free ride for too long – it's time they paid the price for their role in climate destruction" are increasingly common in the media, and there is growing consensus on the need to tax aviation more in order to reduce emissions to achieve the goal of zero emissions by 2050.

This "Think paper" takes a careful look at how best aviation emissions could be reduced, and aims to find answers to the following questions:

- 1. Do taxes on aviation fuel or air tickets, or equivalent measures to compensate for the environmental impact of the emissions generated by private movements, which are already being applied by many states, effectively contribute to reducing aviation emissions?
- 2. Could aviation taxes help reduce the aviation sector's CO<sub>2</sub> emissions in the current COVID context, given the slow economic recovery?
- 3. To what extent could CO<sub>2</sub> goals be met by decarbonising the aviation sector?

**Main findings**

1. While passenger numbers increased by 40% between 2009 and 2017, CO<sub>2</sub> emissions only increased by 10%, and have been somewhat stable.
2. There is little evidence that taxing aviation per se leads to lower CO<sub>2</sub> emissions, nor do raising fuel prices or ticket prices reduce CO<sub>2</sub> emissions.
3. Economic output is the main factor influencing demand, and hence higher air travel CO<sub>2</sub> emissions. Emissions, despite their evolution, and hence must be targeted if a reduction in CO<sub>2</sub> emissions is to be achieved.
4. Long-distance air traffic dominates aviation emissions, despite their evolution, and hence must be targeted if a reduction in CO<sub>2</sub> emissions is to be achieved.
5. Decarbonisation measures should be strongly supported with substantial funding over the next 30 years.
6. If a European tax to reduce aviation CO<sub>2</sub> emissions were to be introduced, it should be ring-fenced to support decarbonisation research.

We seek to find answers to how aviation could best reduce emissions by looking at the impact of factors such as travel restrictions, GDP, passenger demand, fuel prices and others. The paper analyses some of the instruments already in place to reduce CO<sub>2</sub> emissions, as well as the impact that using aviation taxes to decarbonise the aviation sector could have.

**EU CO<sub>2</sub> emissions in the aviation sector - Setting the scene**

One of the key objectives of the EU Green Deal is to allow economic growth while reducing net EU carbon emissions to zero by 2050, including a 55% reduction in transport emissions compared with 1990. In 2019, aviation produced 3.6% of total EU28 greenhouse gas emissions and, as Figure 1 shows, 13.9% of emissions from transport.

**FIGURE 1: SHARE OF TRANSPORT GREENHOUSE GAS EMISSIONS**

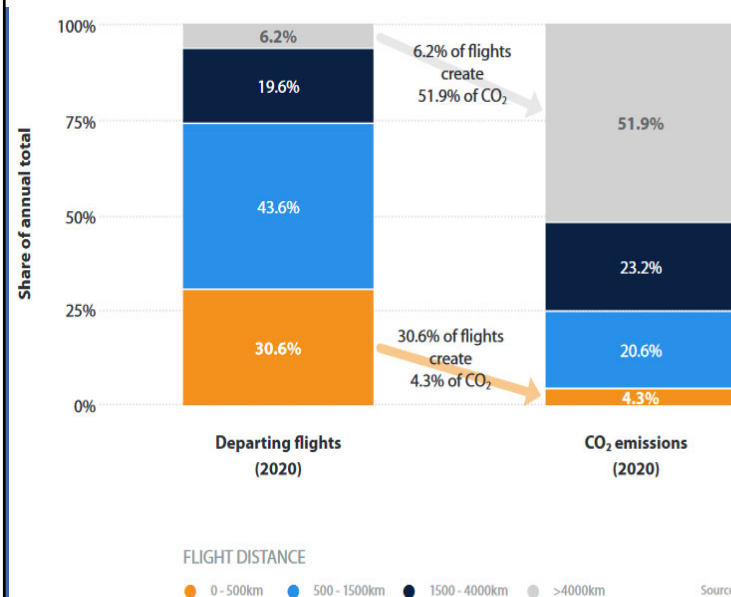
Source: EUROCONTROL, EUROSTAT, 2020

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## Train Vs Plane?



Vital Connectivity



Only viable option for islands/periphery

COVID: Closures. Will they reopen?

Why kill regional connectivity?

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# Sustainable Aviation Fuels

- 80% reduction in CO<sub>2</sub> emissions across their lifecycle ✓
- Viable alternative to conventional fuel ✓
- Better than oil price volatility ✓
- CORSIA - Offsetting ✓

# fello'fly

Wake energy retrieval demonstrator





- Inspired by the flight technique of migrating birds
- Using air upwash to lift a follower aircraft
- fello'fly project to prove safe technical and operational principles
- Industry collaboration with airlines, Air Traffic Control providers & regulators
- 5% to 10% fuel savings on long-haul trips
- Significant emissions reduction

## New Aircraft Technology: KLM Flying-V



20% less  
fuel

314 pax

Same size as  
today's  
aircraft



## Aircraft Electrification & Hydrogen Propulsion





# Supersonic flights back by 2025?



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## Reshaping Flying



Block chain  
Technology

Augmented  
Reality

AI

Beacon  
Technology

Robotics

Biometrics

Wearables

Big Data

Mobile  
Solutions



## Exponential Demand for Data and Game Changer



### In the **short to medium** term:

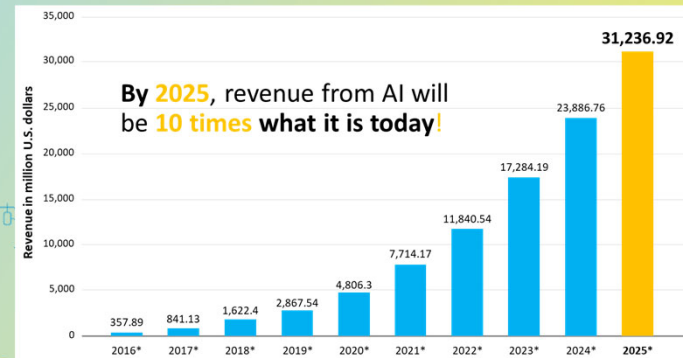
- Flight optimisation
- Preventive maintenance
- Optimisation of operations in all domains (Airport, Airlines, Flow and capacity management)

### In the **longer** term:

- Single pilot or pilotless operations
- Automated ATC

## And so are revenues

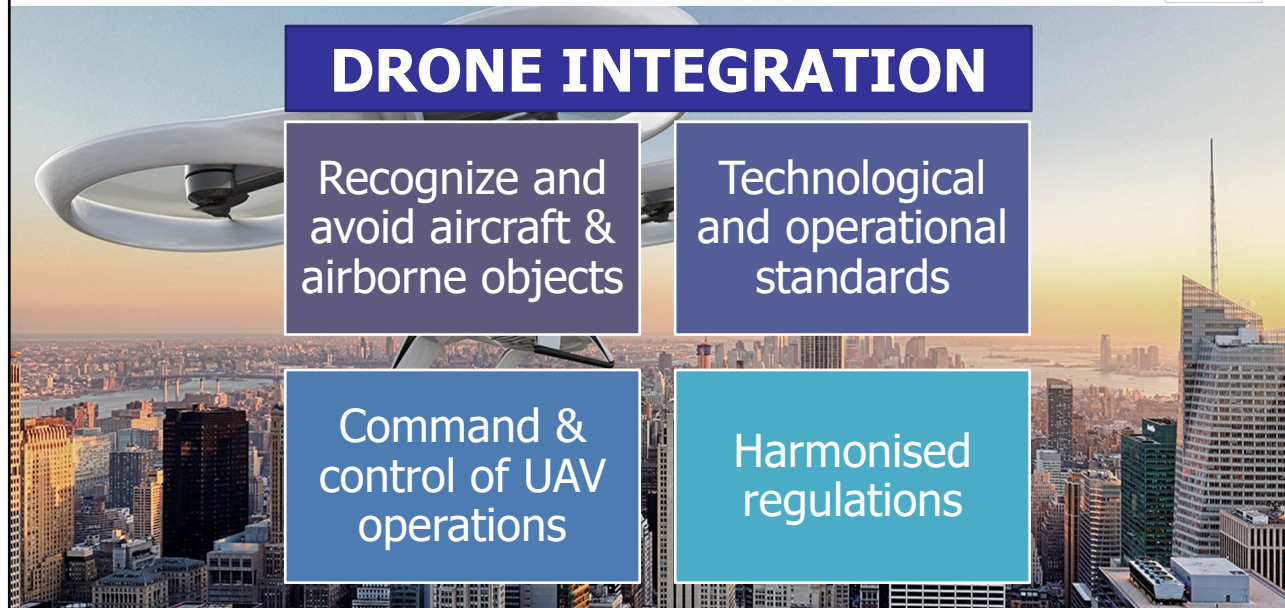
Enterprise artificial intelligence market revenue worldwide 2016-2025



## Aviation-Growing Cyber challenges



# Drones and Urban Mobility Challenges



# Future aviation landscape





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Thank you

Eamonn Brennan, Director General

@eurocontrolDG

