

BUSINESS AVIATION

# EMISSION DATA ANALYSIS

February 2021

*COVID-19 Edition*

# What is the evolution of the environmental footprint of Business aviation in Europe?

EMISSIONS HAVE EVOLVED



ACTIVITY HAS EVOLVED



AIRCRAFT HAVE EVOLVED



- Improved Airframe & Engines

## Business aircraft have improved efficiency

### TECHNOLOGY IMPROVEMENTS

*Engine & Airframe materials  
efficiency gains, as estimated  
by WINGX following discussions  
with Bombardier/GAMA group,  
range around*

***-0,8%***

***every year in average since***  
***2005.***





## What is the evolution of the environmental footprint of Business aviation in Europe?

EMISSIONS HAVE EVOLVED



- More emissions

ACTIVITY HAS EVOLVED



AIRCRAFT HAVE EVOLVED

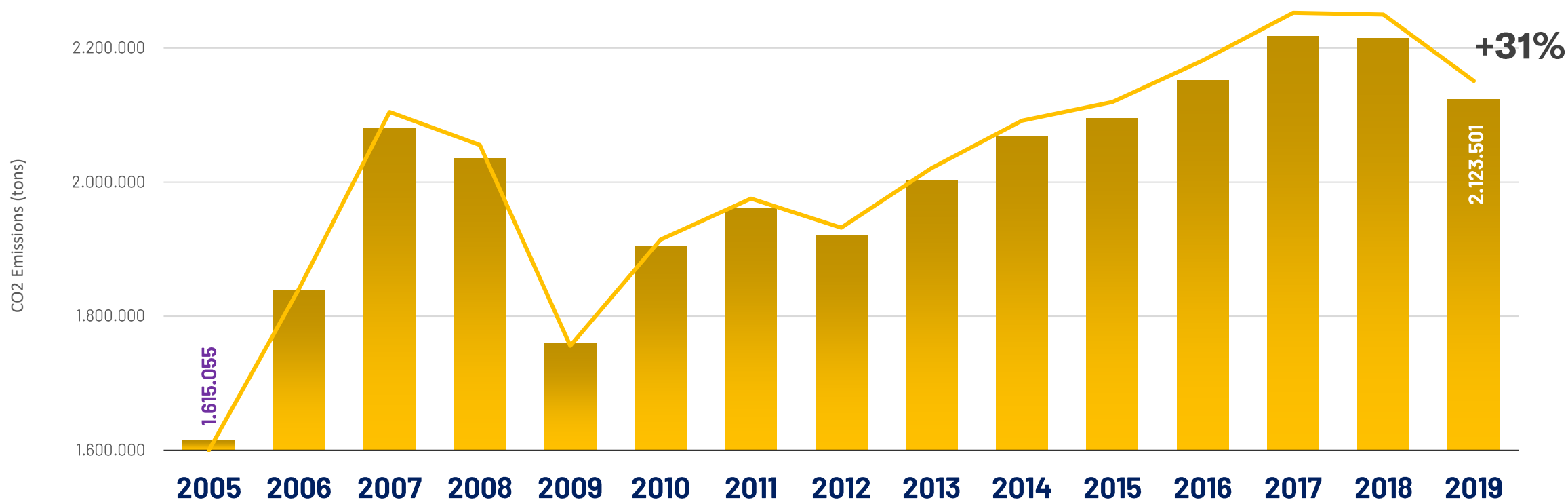


- Improved Airframe & Engines

Despite **technology improvements**, Business aviation CO2 emissions have increased since 2005 ...

Source : WingX based on version 2 (RDC) analysis of flight activity of target fleet 2005-2019

**Estimated CO2 (in tons)** + Estimated growth over 2005



In 2019, Business aviation has emitted **31%** more CO2 than in 2005  
*Compounded Annual Growth Rate (CAGR) = +2% (in average, +2% per year)*

## What is the evolution of the environmental footprint of Business aviation in Europe?

EMISSIONS HAVE EVOLVED



- More emissions

ACTIVITY HAS EVOLVED



- More airplanes

AIRCRAFT HAVE EVOLVED

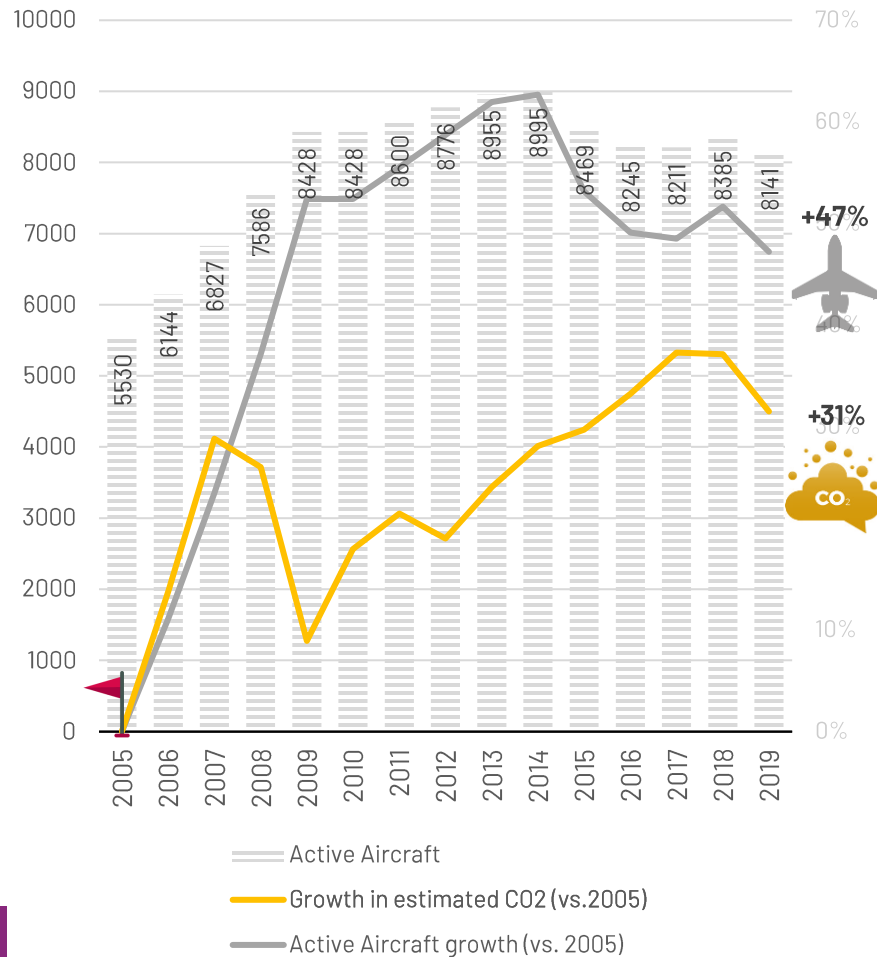


- Improved Airframe & Engines

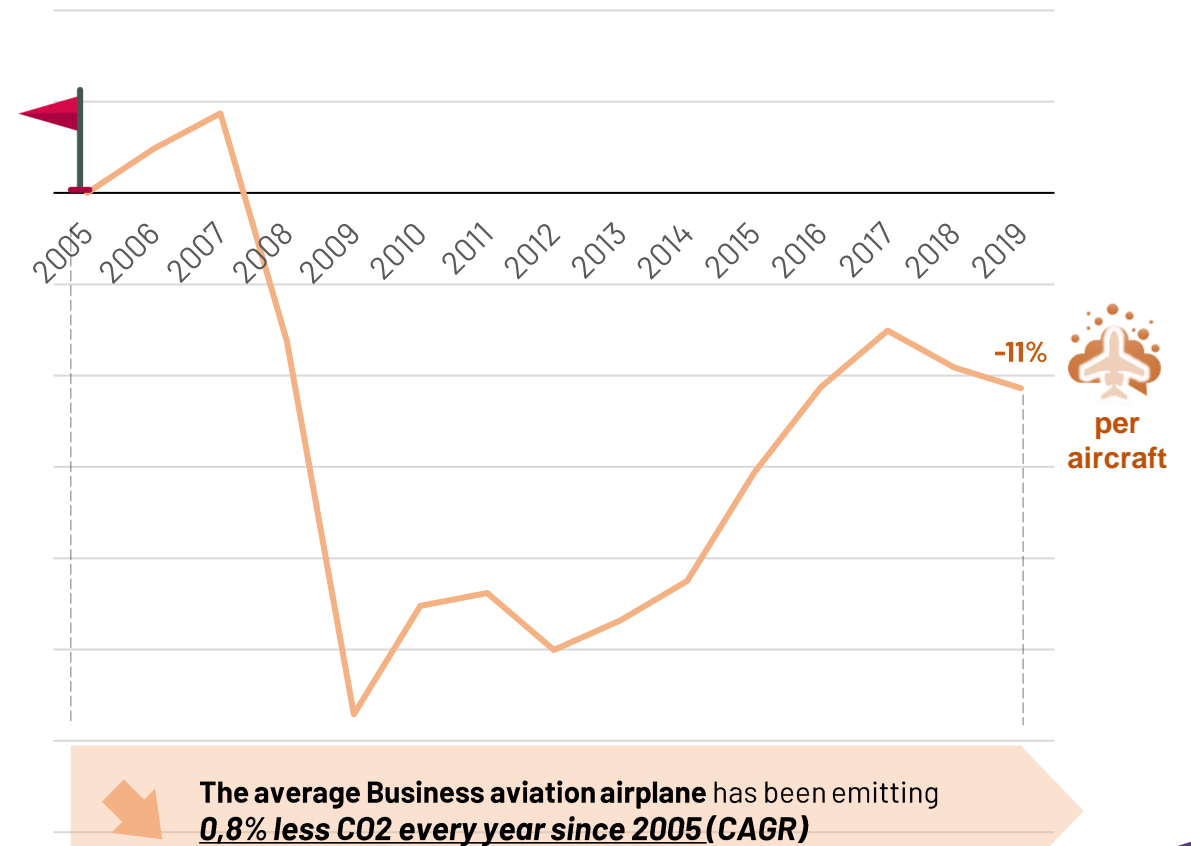
... but there are more airplanes flying,

Source : WingX based on version 2 (RDC) analysis of flight activity of target fleet 2005-2019

Active BizAv fleet evolution  
VS. CO2 emission evolution (BASE : 2005)



"Average emissions per aircraft" evolution  
(vs.2005)



## What is the evolution of the environmental footprint of Business aviation in Europe?

EMISSIONS HAVE EVOLVED



- More emissions

ACTIVITY HAS EVOLVED



- More airplanes
- More flights

AIRPLANES HAVE EVOLVED



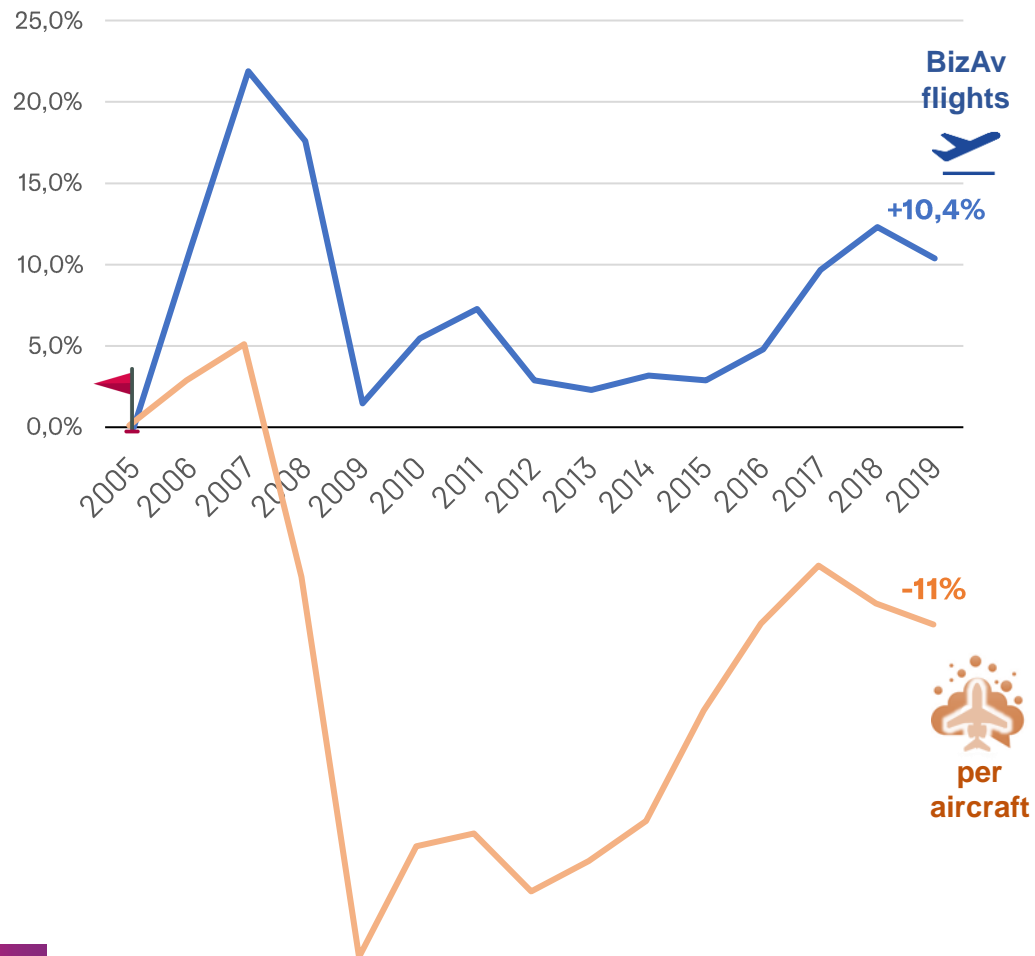
- Improved Airframe & Engines



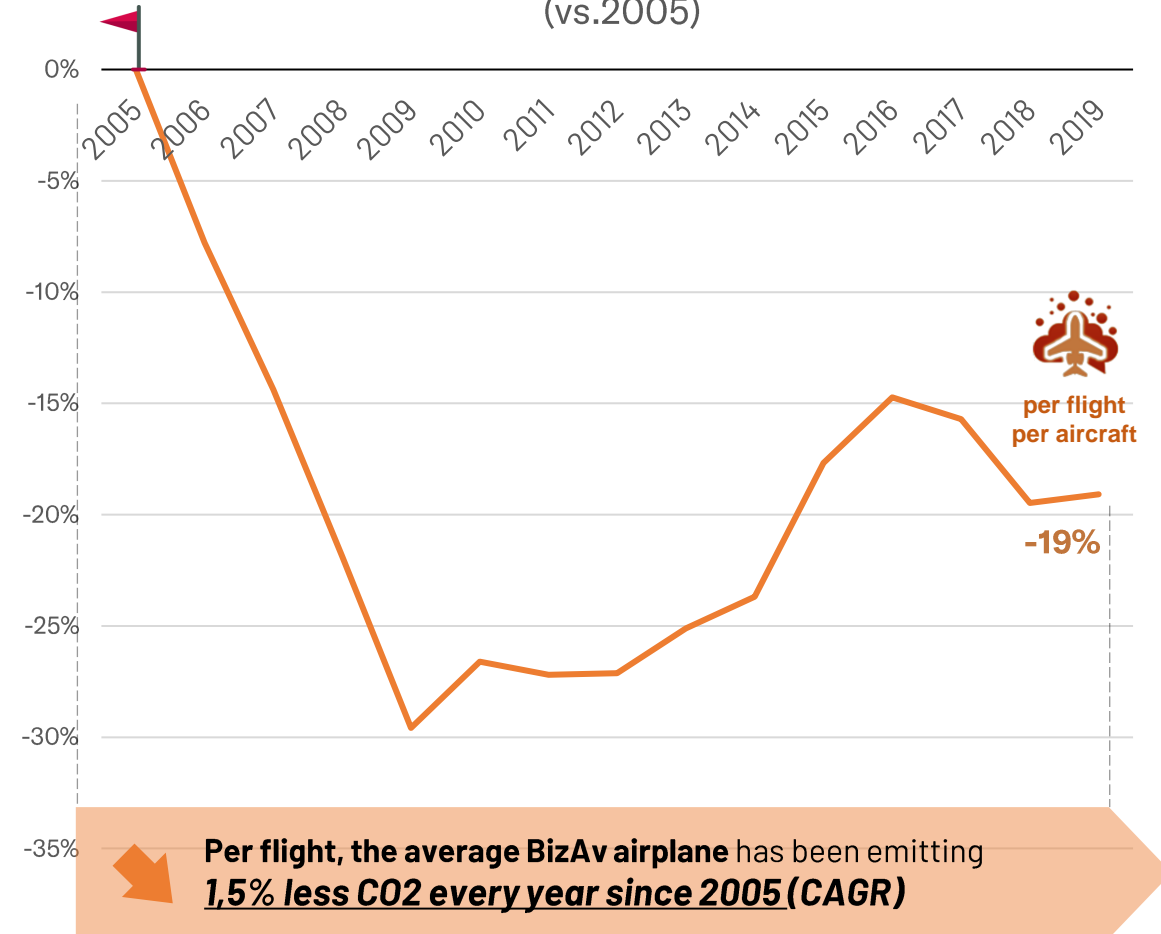
... and there are more flights,

Source : WingX based on version 2 (RDC) analysis of flight activity of target fleet 2005-2019

BizAv Flights evolution (vs.2005)



“Emissions per flight per aircraft” Evolution (vs.2005)



## What is the evolution of the environmental footprint of Business aviation in Europe?

EMISSIONS HAVE EVOLVED



- More emissions

ACTIVITY HAS EVOLVED



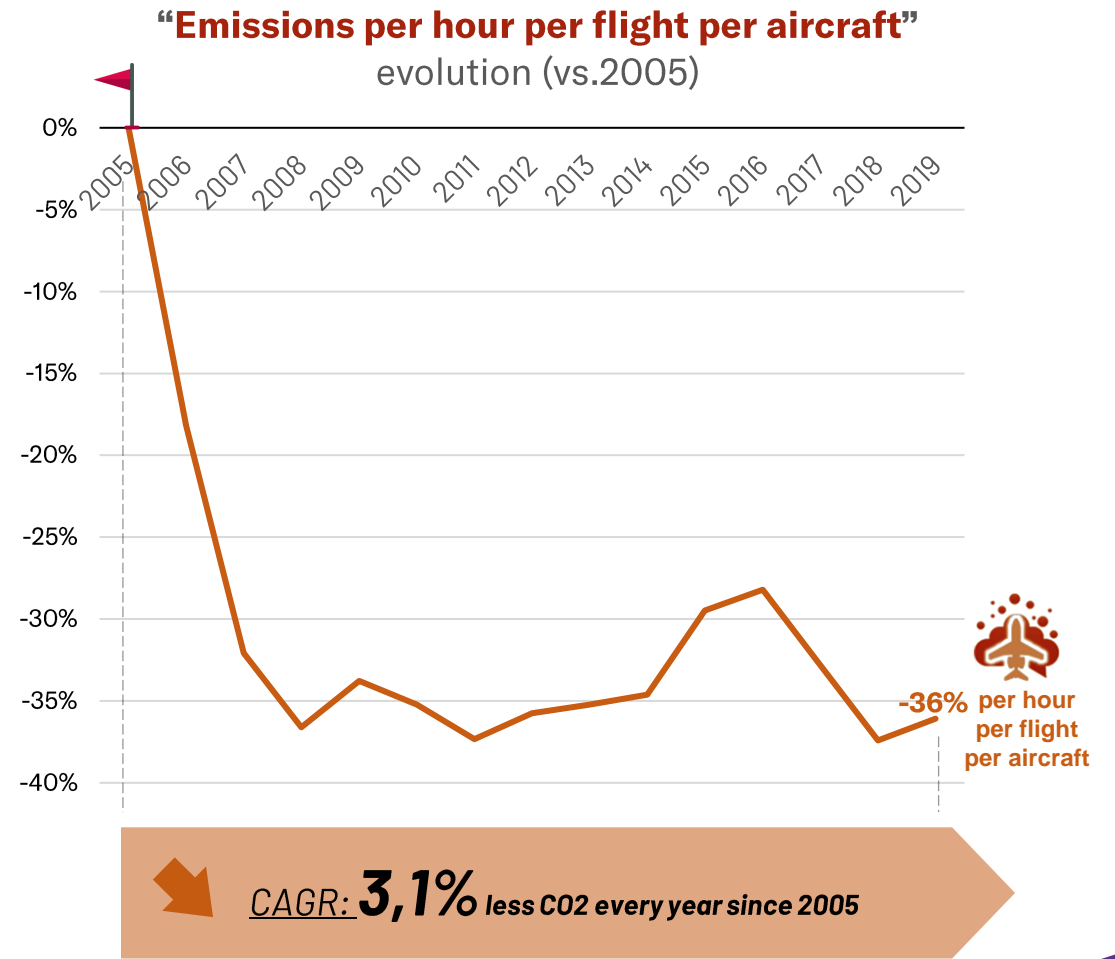
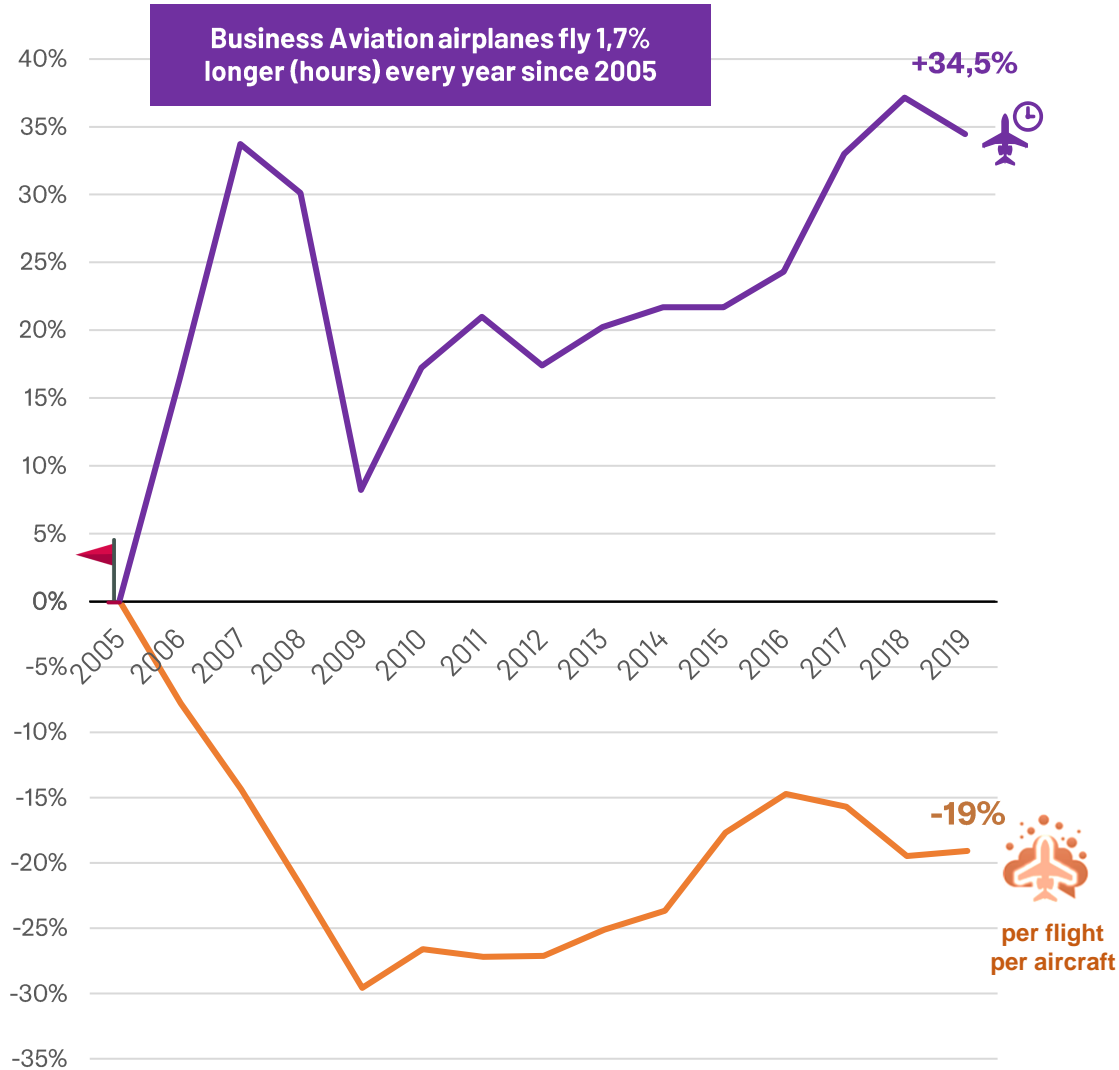
- More airplanes
- More flights
- More time

AIRPLANES HAVE EVOLVED



- Improved Airframe & Engines

## ..., airplanes are flying longer ...



## What is the evolution of the environmental footprint of Business aviation in Europe?

EMISSIONS HAVE EVOLVED



- More emissions

ACTIVITY HAS EVOLVED



- More airplanes
- More flights
- More time
- **More distance**

AIRPLANES HAVE EVOLVED

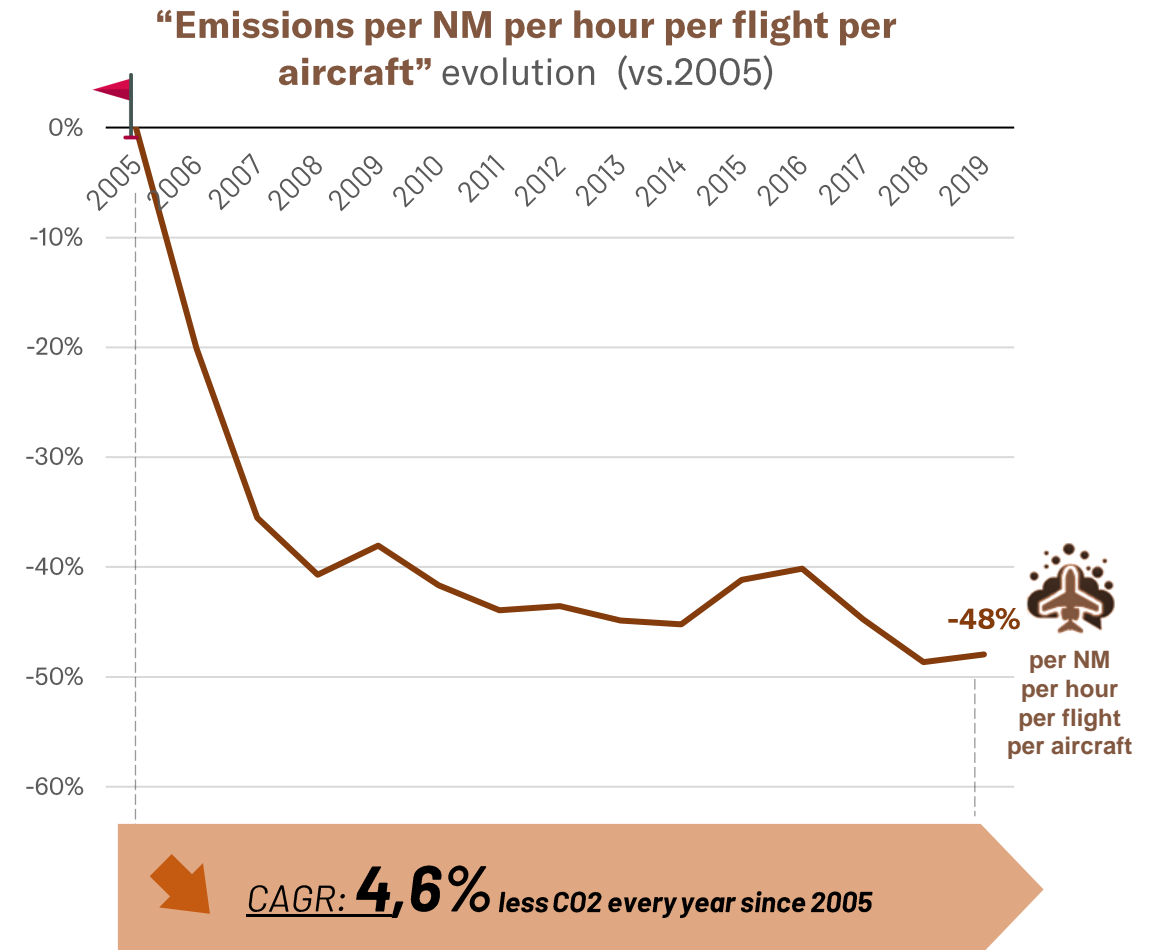
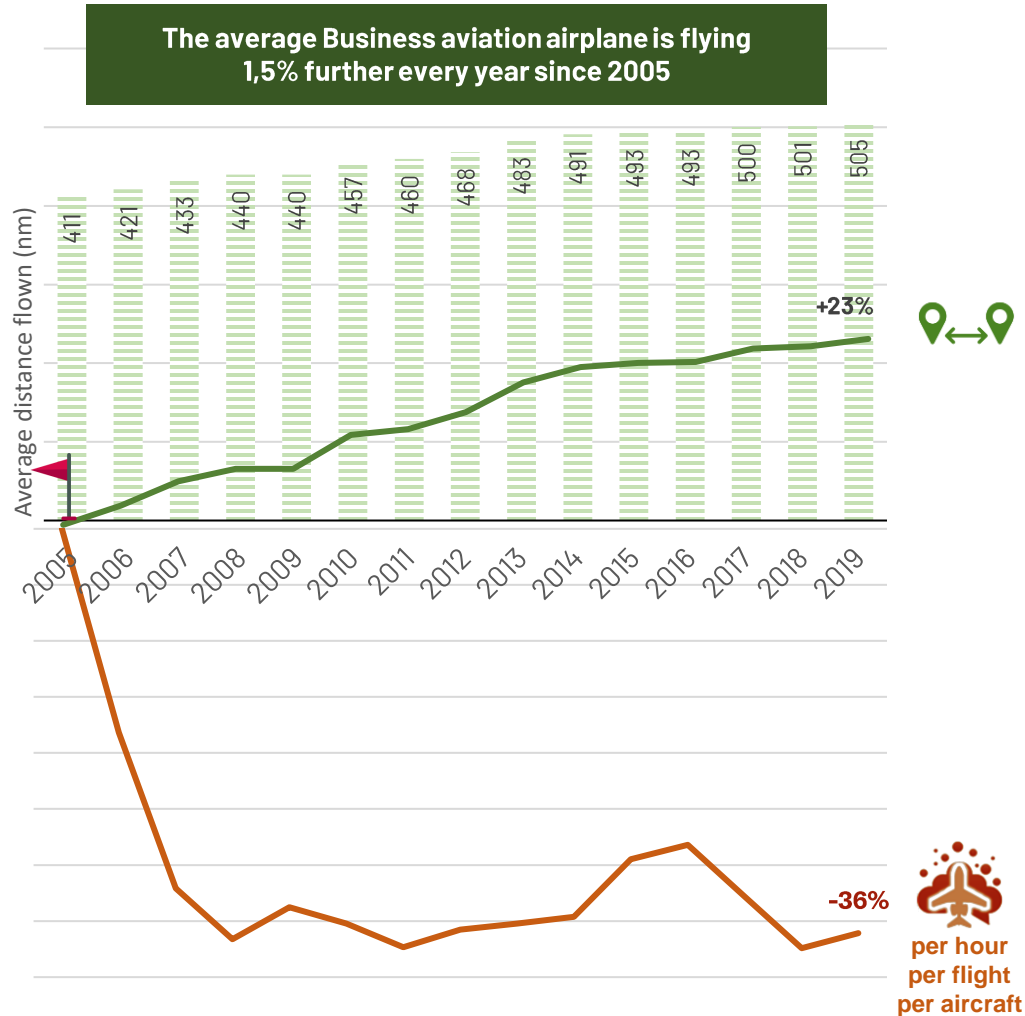


- Improved Airframe & Engines



..., airplanes are flying further ...

Source : WingX based on version 2 (RDC) analysis of flight activity of target fleet 2005-2019



## What is the evolution of the environmental footprint of Business aviation in Europe?

### EMISSIONS HAVE EVOLVED



- More emissions

### ACTIVITY HAS EVOLVED



- More airplanes
- More flights
- More time
- More distance

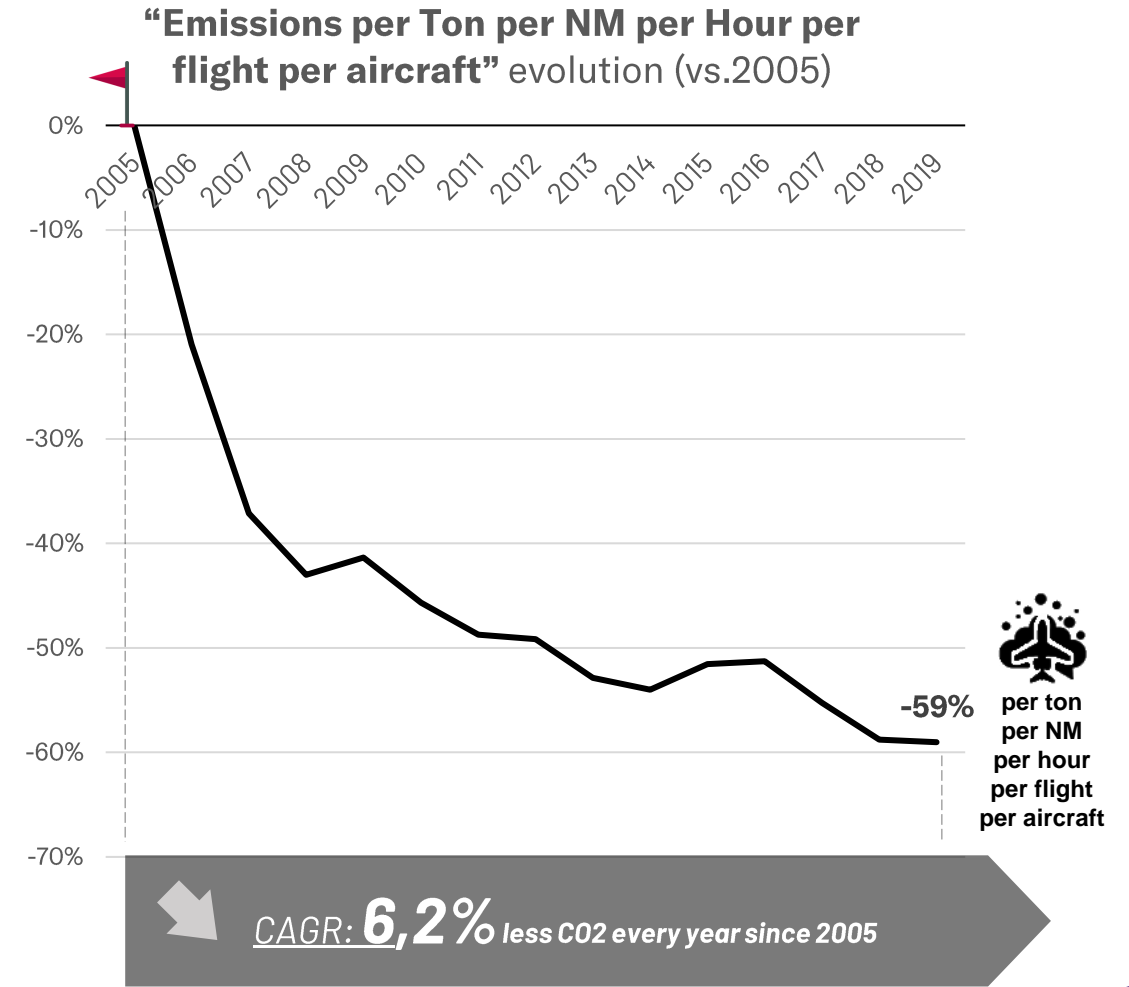
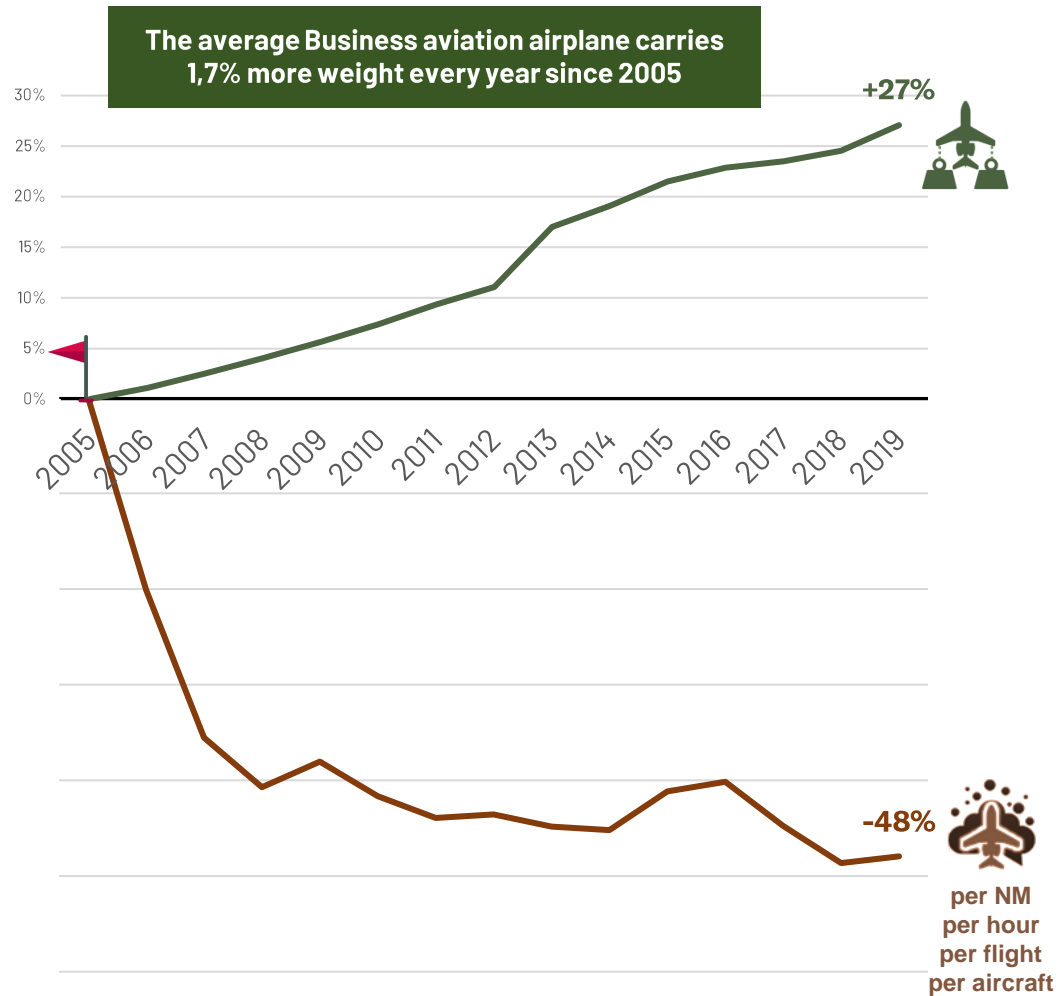
### AIRPLANES HAVE EVOLVED



- Improved Airframe & Engines
- **Heavier airplanes**

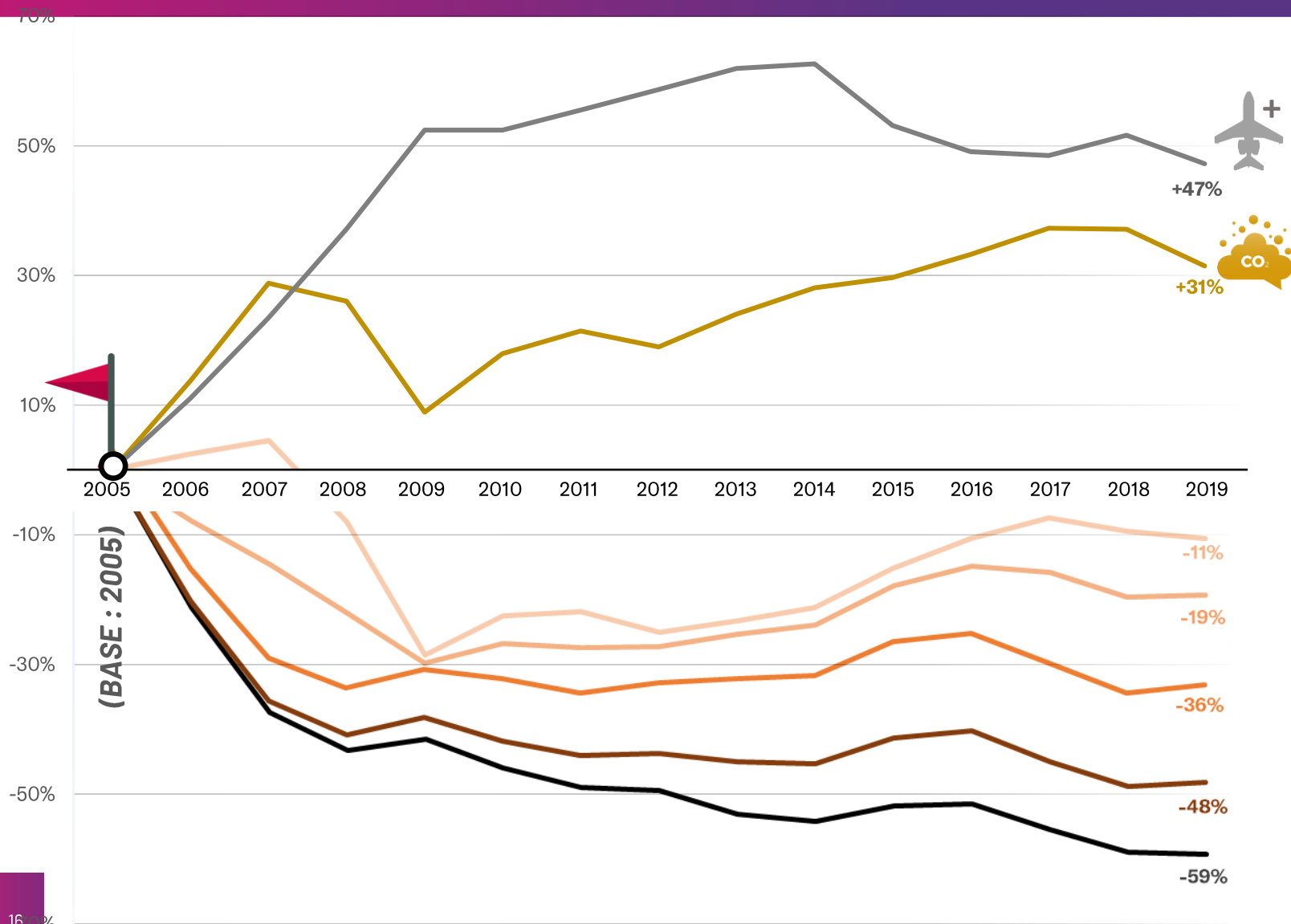
## ... and carry more weight

Source : WingX based on version 2 (RDC) analysis of flight activity of target fleet 2005-2019



# SUMMARY

Source : WingX based on version 2 (RDC) analysis of flight activity of target fleet 2005-2019



With technology improvements and with 47% more aircraft flying,...

...there are 31% more CO2 emissions than 15 years ago

Yet,

Compound **annual growth rate** (CAGR)

the average aircraft emits less, ...	Emissions per 1 aircraft	<b>-0,8%</b> (every year)
..., flies more, ...	Emissions per 1 flight per 1 aircraft	<b>-1,5%</b> (every year)
..., flies longer, ...	Emissions per 1 hour per 1 flight per 1 aircraft	<b>-3,1%</b> (every year)
..., flies further ...	Emissions per 1 nm per 1 hour per 1 flight per 1 aircraft	<b>-4,6%</b> (every year)
... and is heavier.	Emissions per 1 ton per 1 nm per 1 hour per 1 flight per 1 aircraft	<b>-6,2%</b> (every year)



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