

# Carbon Offsetting



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Aviation and Carbon Markets  
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## Agenda:

- Emission - Calculator

What are the emissions per pax and journey?

- CO<sub>2</sub> or Multiplier

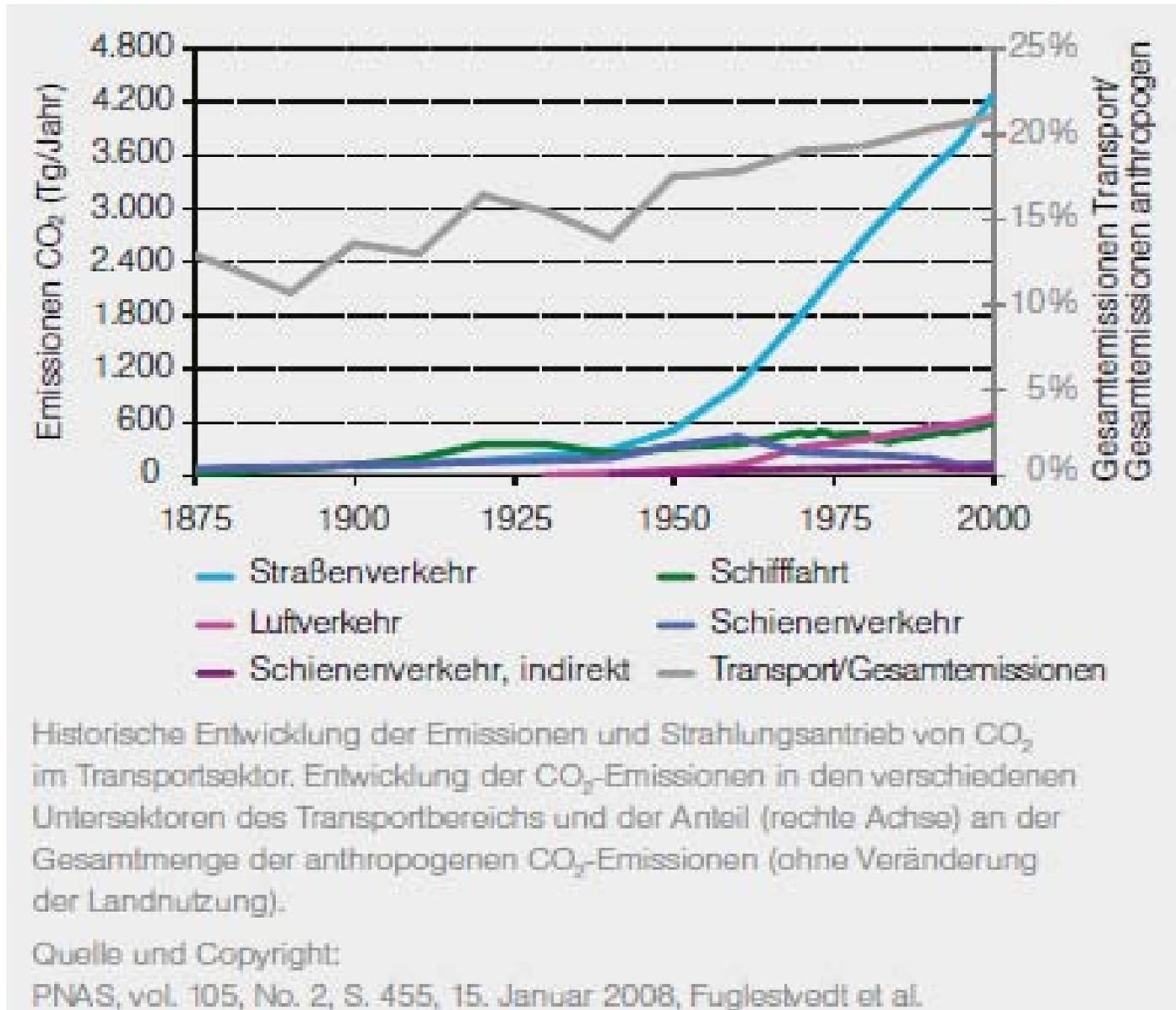
What is the most relevant gas ?

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Partner: myclimate

Standards for projects

# Myth: Aviation the fastest growing sector



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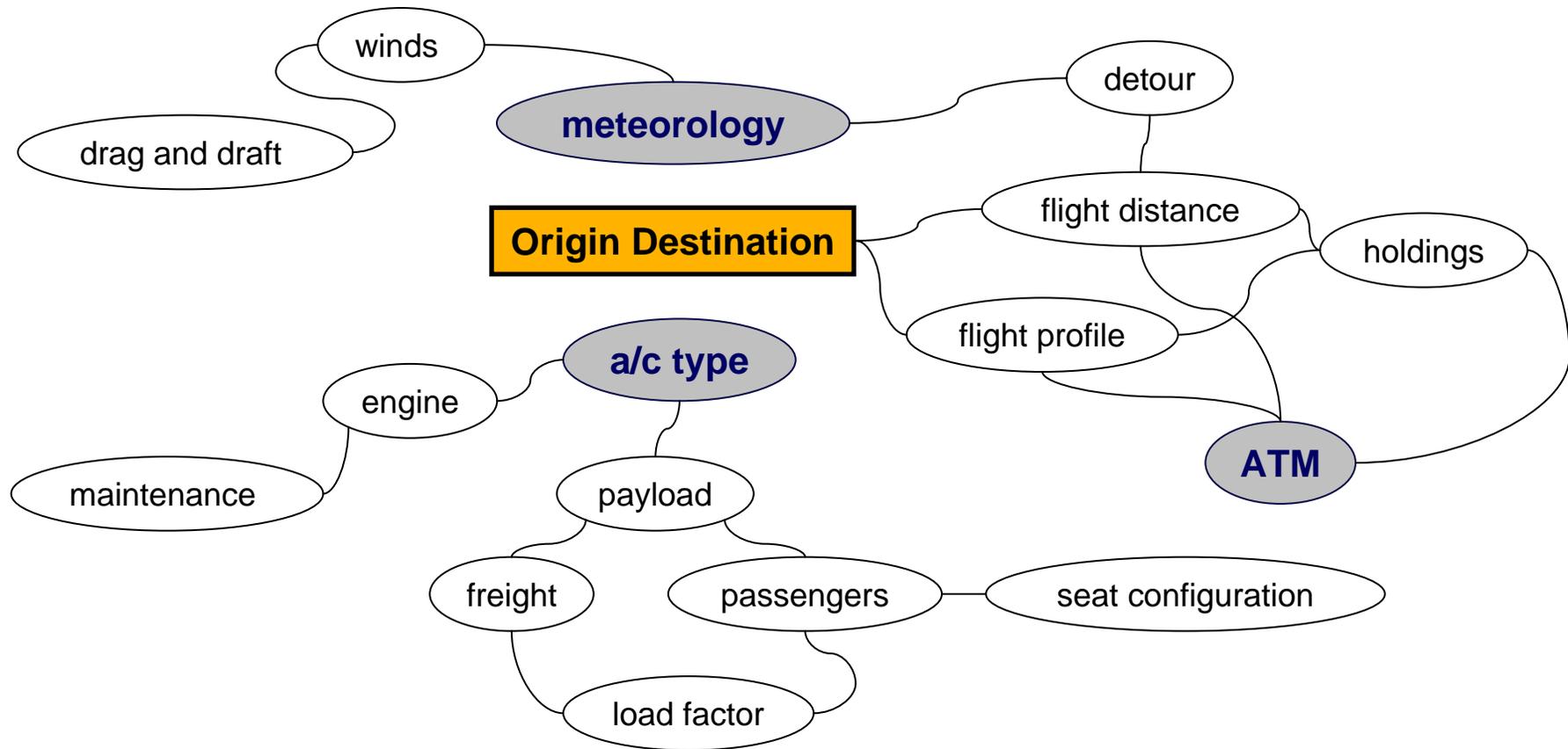
# What emissions are caused by a single passenger during one flight?

An easy question ! **???** – however, many answers have been given in the last years

**Fact is,  
the fuel use of a flight depends on many parameters ...**

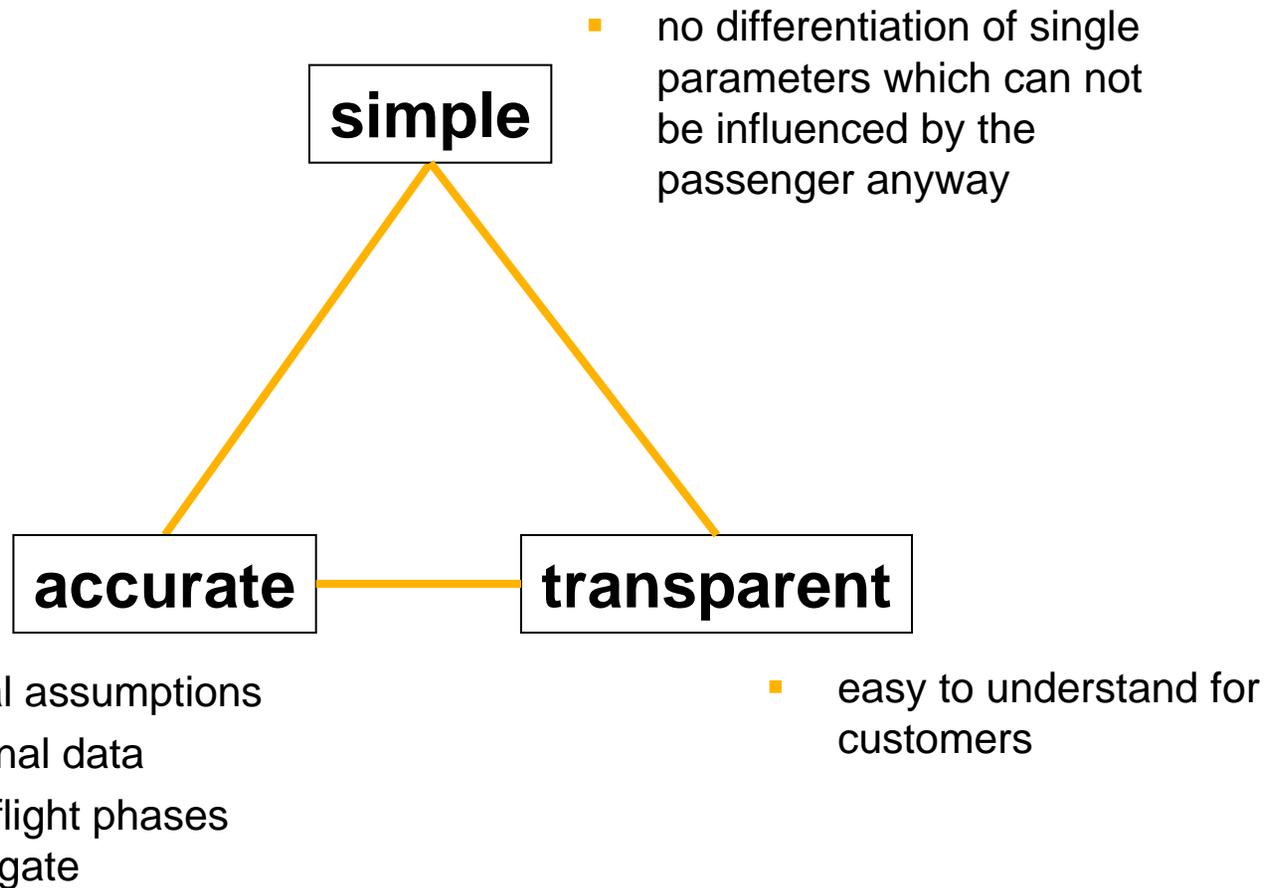
- ... and almost none of them are constant
- ... or precisely predictable
- ... but rather vary from day to day
- ... from flight to flight
- ... and from airline to airline

# What influences the emissions of a single flight?

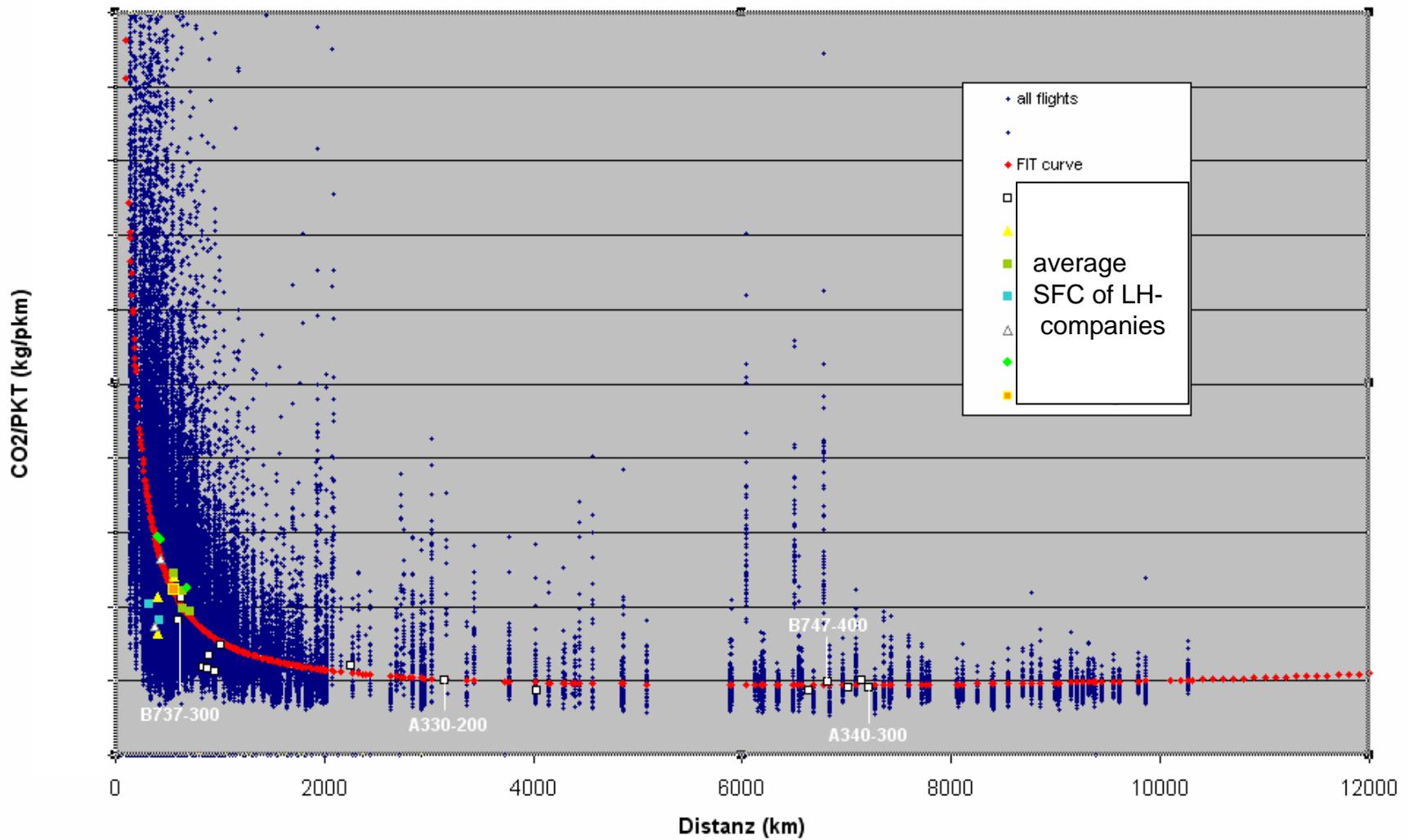


**The only solid parameter is origin and destination – all others may vary from flight to flight!**

# How to design an emission - calculator? Our requirements and our approach



We have analyzed 58,000 flights in 2006 with respect to fuel use from gate to gate



# Operational flight data reveal...

- In general, high variability of fuel use even on same distances (city pairs)
- Short haul flights show higher variability than long haul flights

## Our conclusions are...

- Administrational efforts to monitor single flight events would be tremendous
- Passengers would be confused if the compensation costs would differ from flight to flight on one single destination.
- Average operational values applied on a longer time scale (year) do cover the real CO2 emissions quite nicely since up's and down's are counterbalanced.

# Calculation method

- We use real fuel consumptions from gate to gate to cover all flight phases from taxiing on ground to detours and holdings in the air.
- We use real numbers of passengers on board.
- We use a statistical approach to average out the highly variable parameters like meteorology, ATM and changes in a/c operation.
- We use a mathematical best fit which describes the emissions per passenger-kilometer dependent on the flown distance
- **We focus on CO<sub>2</sub> only**

$$\frac{\text{CO}_2}{\text{pkm}} \text{ (flight distance)} \times \text{flight distance} = \text{CO}_2 \text{ per passenger and flight}$$

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# We offer CO<sub>2</sub> compensation – and nothing else Why?

- **CO<sub>2</sub> is the key Kyoto gas. Due to its mean lifetime of 60 – 100 years it has long lasting impact**
- **Multiplier is based on “radiative forcing” which is no adequate parameter to assess future climate change.**

From Forster, P. et al. (2007) Changes in Atmospheric Constituents and in Radiative Forcing.  
in Climate Change 2007:

The Physical Science Basis. <http://www.ipcc.ch>

**"One alternative, the RF index (RFI) introduced by IPCC (1999), should not be used as an emission metric since it does not account for the different residence times of different forcing agents."**

- **Effect of contrails and subsequent contrail cirrus clouds are still afflicted with large error bars.**

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# Carbon offset projects and criteria's for a partner selection



- **high project quality – CDM and/or Gold Standard**
- international reputation through long experience and high-quality projects
  - „myclimate’s high project standards, its transparency and good calculator makes it an excellent choice for offsetting air travel emissions.”  
(Tufts University, MA/USA, 2007)
  - among top 3 out of 170 offset providers worldwide (EndsReport, 2008)
- broad national and international network
- non-profit foundation



# Carbon offset projects and its standards



- **permanency**
  - renewable energy & energy efficient technologies
- **additionality**
  - projects need financial means of emission reduction sale
- **sustainability**
  - inclusion of and benefits for the local population, jobs, technology transfer, improves air-, water- and soil-quality

**Important: CO<sub>2</sub> mitigation should be realized in a limited time (some years)**





Thank you for your  
attention!

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