



Aviation Emissions: Why transparent and accurate data are needed

Reducing emissions will
change the shape of the airline
industry

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GLASGOW

COP26

IN PARTNERSHIP WITH ITALY

Post-COP26 there will be increased pressures for better sustainability performance :

- **Government intervention**
- **Corporate customers – need to reduce their footprint**
- **Investors – responsible investment: ESG**



Importantly, the airline industry is today more economically challenged than it has ever been

This is a unique moment economically for the airline industry.

COVID has created a cost-revenue double whammy:

1. A massive overhang of debt, only now starting to impact widely, as government support evaporates
 - Airlines will collapse in 2022
 - Ability to absorb additional (environment-related) costs is more limited than ever
 - A new profile of airline operations – lower cost, short-medium haul – should prosper
2. Enormous uncertainty about travel and reopening of borders as health concerns continue
 - Consumer concerns and “hard” borders will limit demand
 - Business travel seriously constrained for a variety of reasons

One positive result is that emissions will be significantly reduced up until ~2025

To fix the problem, it needs to be measured...

- Measurement of the industry's global travel footprint has been controversial, as varying formulae are used
- Equally, measuring *individual* airline unit emission levels is complex and less than transparent, involving for example:
 - Should first, business, premium economy class passengers be assessed higher than economy pax?
 - How to compare journeys that involve more than one take off (higher emissions)?
 - How do type of aircraft used, configuration, load factor, age etc affect outcomes?
- ICAO and IATA are promoting a standard form of measurement for CO2 emissions; input data remain controversial

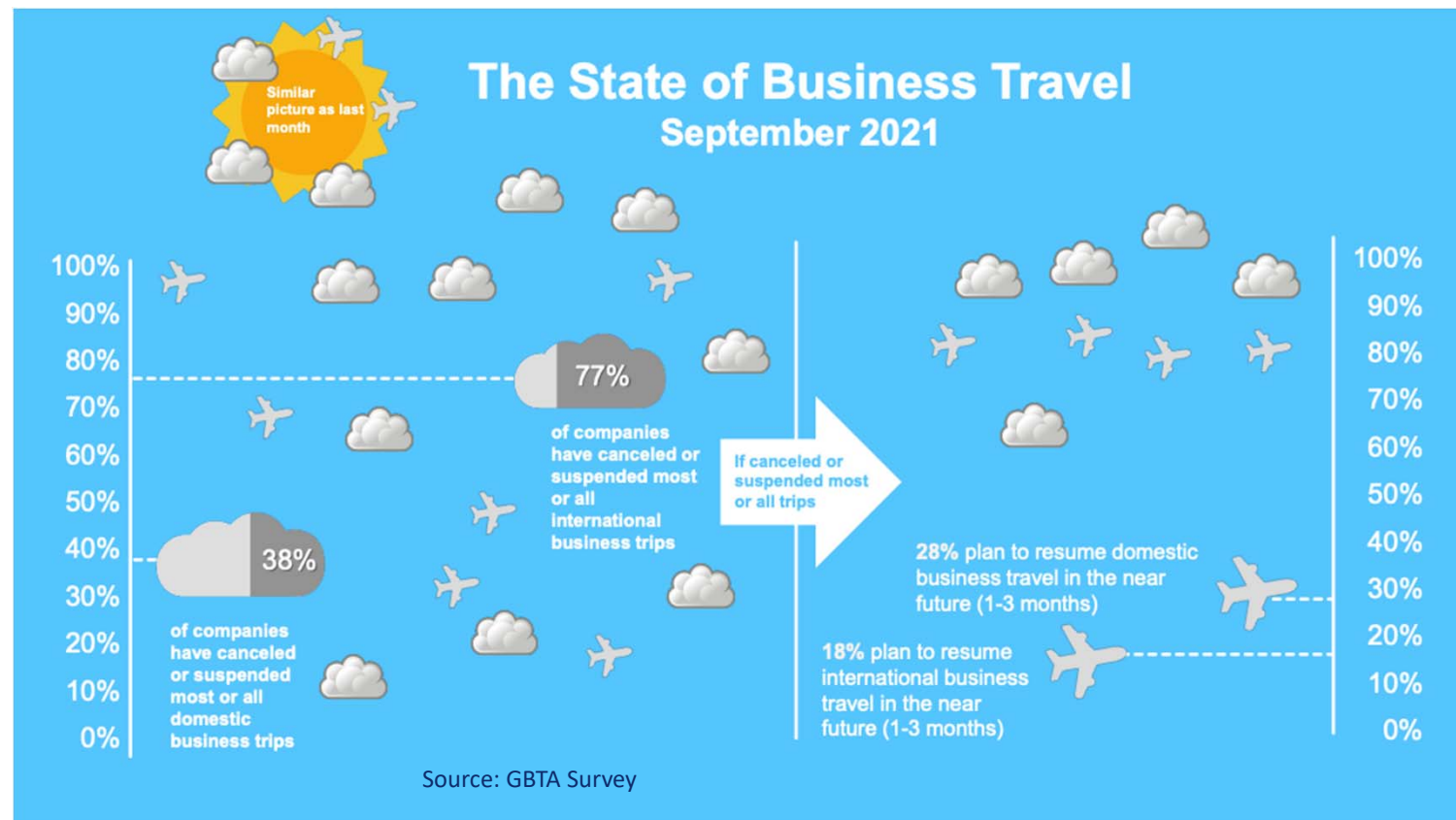
... because it will change the shape of the airline industry

- Governments and the industry should be aware of the impact of how we respond to the need for emission reductions
- The outcome will not be business as usual
- Combined with the overhang of COVID-19, different types of airline will much more adversely affected than others – under almost any reduction scenarios

Business travel decline alone could transform airline profitability profiles

Our analytics relate to 2019 data

A 30-50% decline in business travel for 2-3 years would impact particularly on international long haul travel – the largest emitter



Four essential airline actions – none of them simple

Response #1

Response #2

Response #3

Response #4



Reduce emissions
The scientific task

Convince
governments

Convince investors
and corporates

Respond to the
Extinction Rebellion,
The popular argument



The starting point

1. Need to make *real* emission reductions
 2. Publicise them without fluff
 3. Avoid greenwashing
 4. *Measure them* – consistently and scientifically
-

(1) Carbon pricing becomes core in the short term

Most airlines are following broadly the same net-zero strategy:

- Move to new, more fuel efficient aircraft
- Improve operational/flight efficiencies
- Use market based instruments (including carbon capture and carbon offsets)
- Use SAFs
- Introduce new generation hydrogen and electric aircraft

All of these add costs (except operational and flight efficiencies) and will take several years to show widespread effects

2030 – no reduction?

- Based on our modelling, airline industry CO2 emissions in 2030 will be unchanged from 2019 emissions
- The net increase in SAF use and fuel efficiencies from fleet and operational improvements is expected to balance the growth in passenger numbers

So carbon pricing becomes the decider

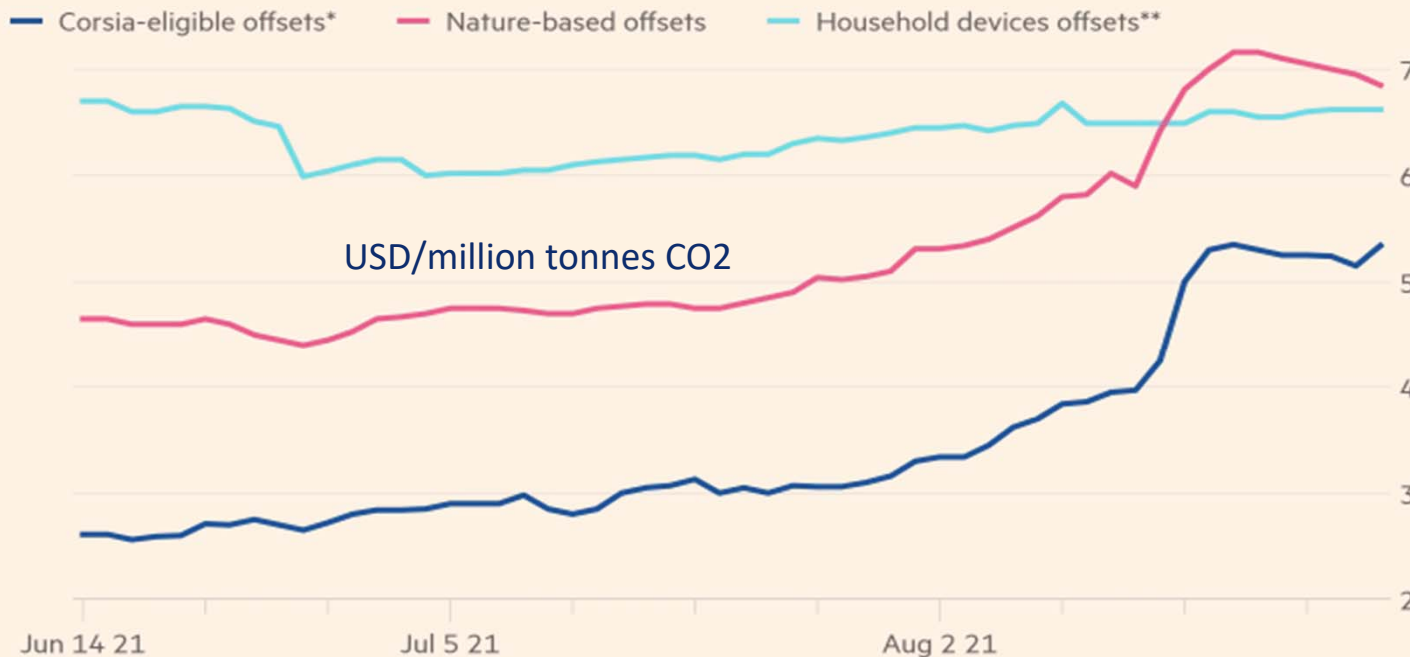
Simple carbon offsets may become less simple

- In 2019 the industry emitted ~900 million tonnes of CO₂
- (In 2020 offsets covered only about 3.5% of total emissions)
- McKinsey: USD40-80/tonne a true reflection of the full carbon price
- The US government: the true social cost of carbon closer to USD125-150/tonne
- Carbon offset prices are still evolving. In the short term, it's around USD5/tonne = industry cost USD4.5 billion pa
- Assuming a carbon price of EUR60 or USD70/tonne = ~USD65 billion

Costs: CORSIA-related offset prices are rising fast

Offset prices have risen this year amid growing demand

S&P carbon credit prices (\$/MtCO₂e)



Relying on offsets as the only viable short-term solution may become very costly

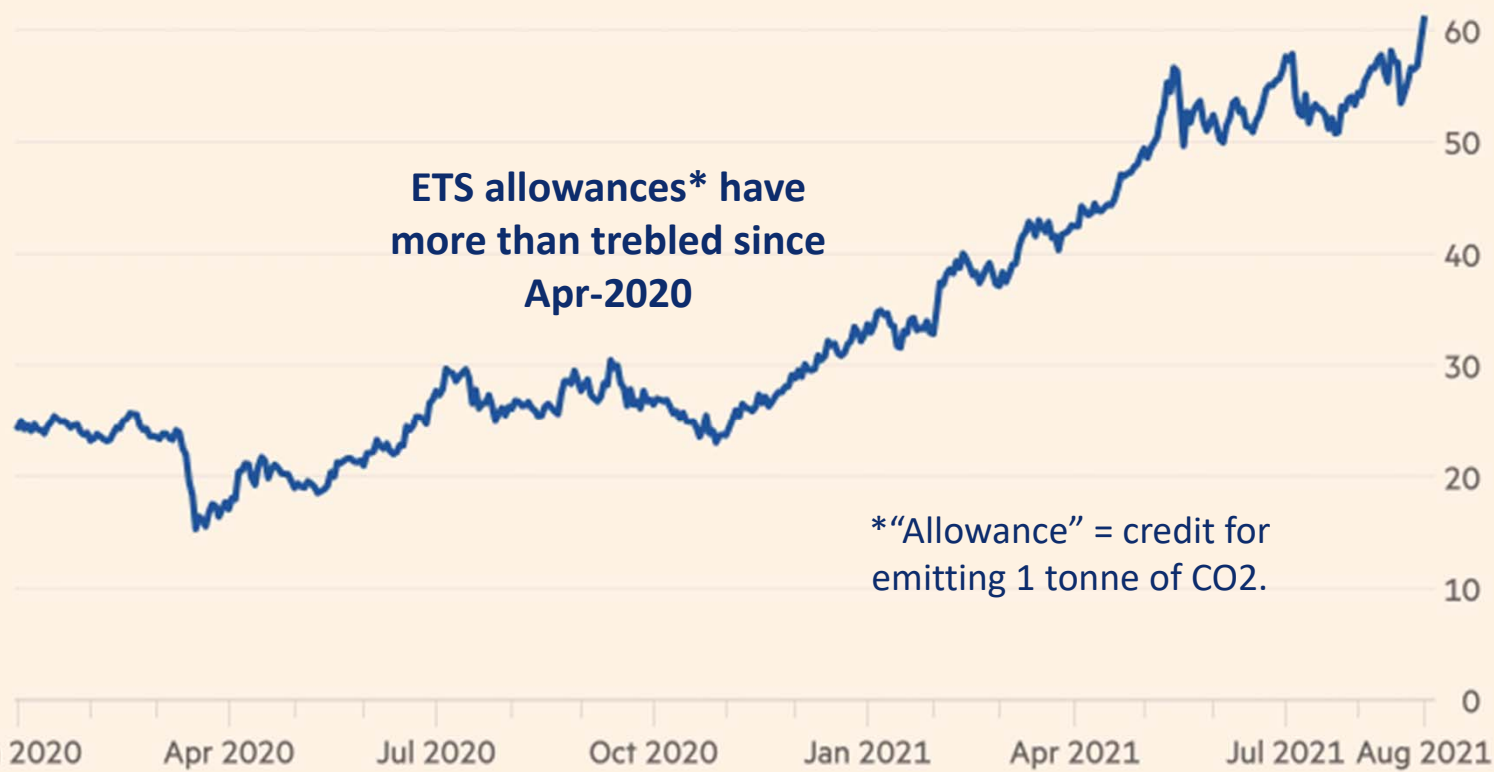
CORSIA prices have almost doubled in recent months.

*Corsia is the aviation industry's offsetting scheme **Carbon avoidance projects such as clean cookstoves

Source: S&P Global Platts

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EU ETS prices are rising even faster

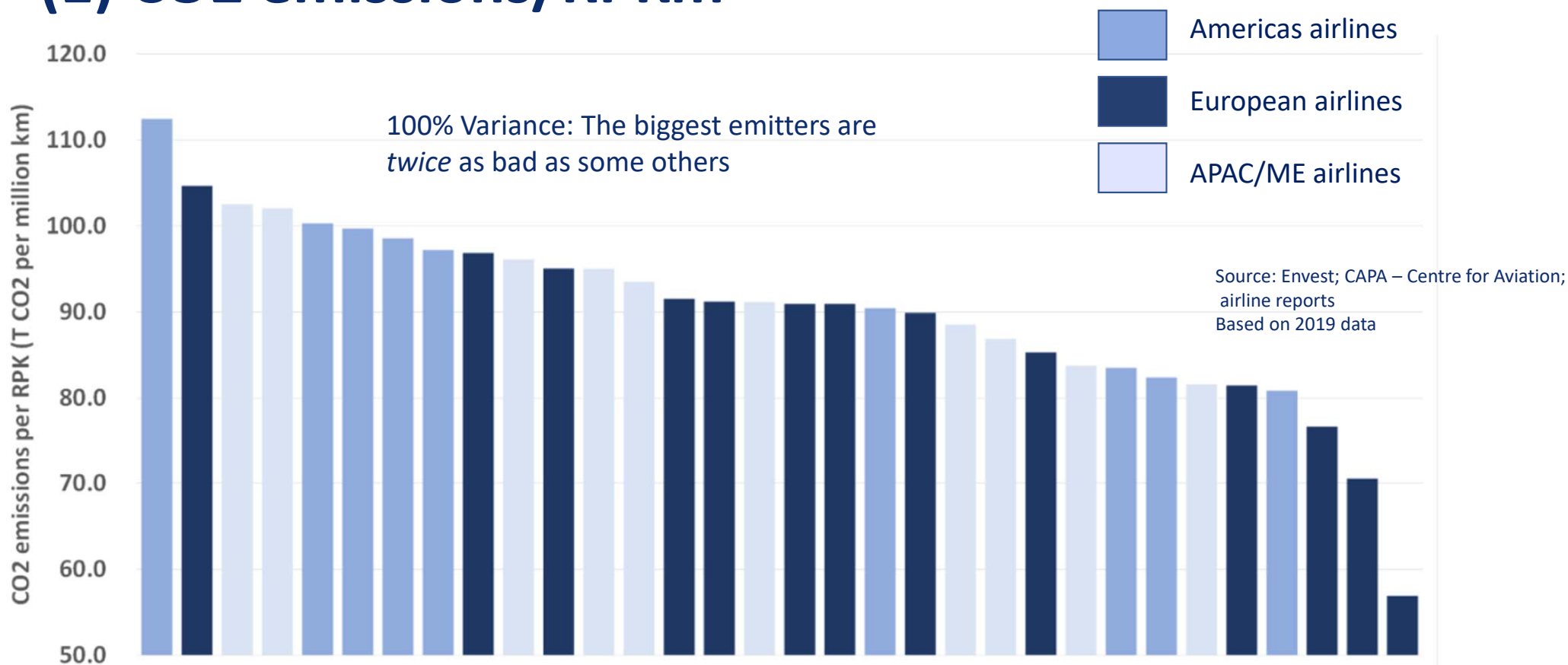


(Serious danger is this becomes a money market play)

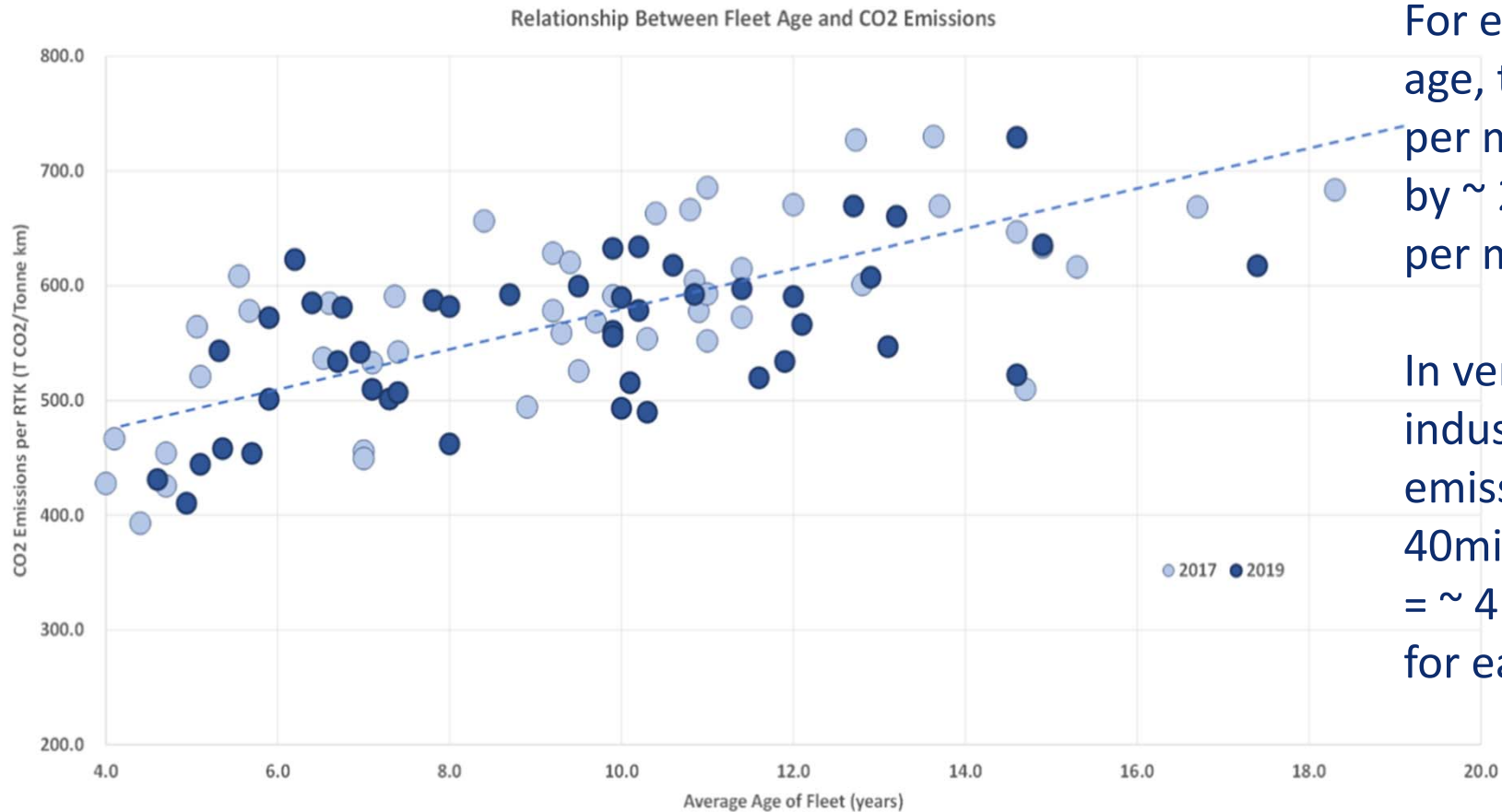
*"Allowance" = credit for emitting 1 tonne of CO2.

Which airlines are most challenged?

(1) CO2 emissions/RPKm



Fleet age has a major impact on emissions



For every year of fleet age, the CO₂ emissions per million RTK increase by ~ 20 Tonnes of CO₂ per mTonne km

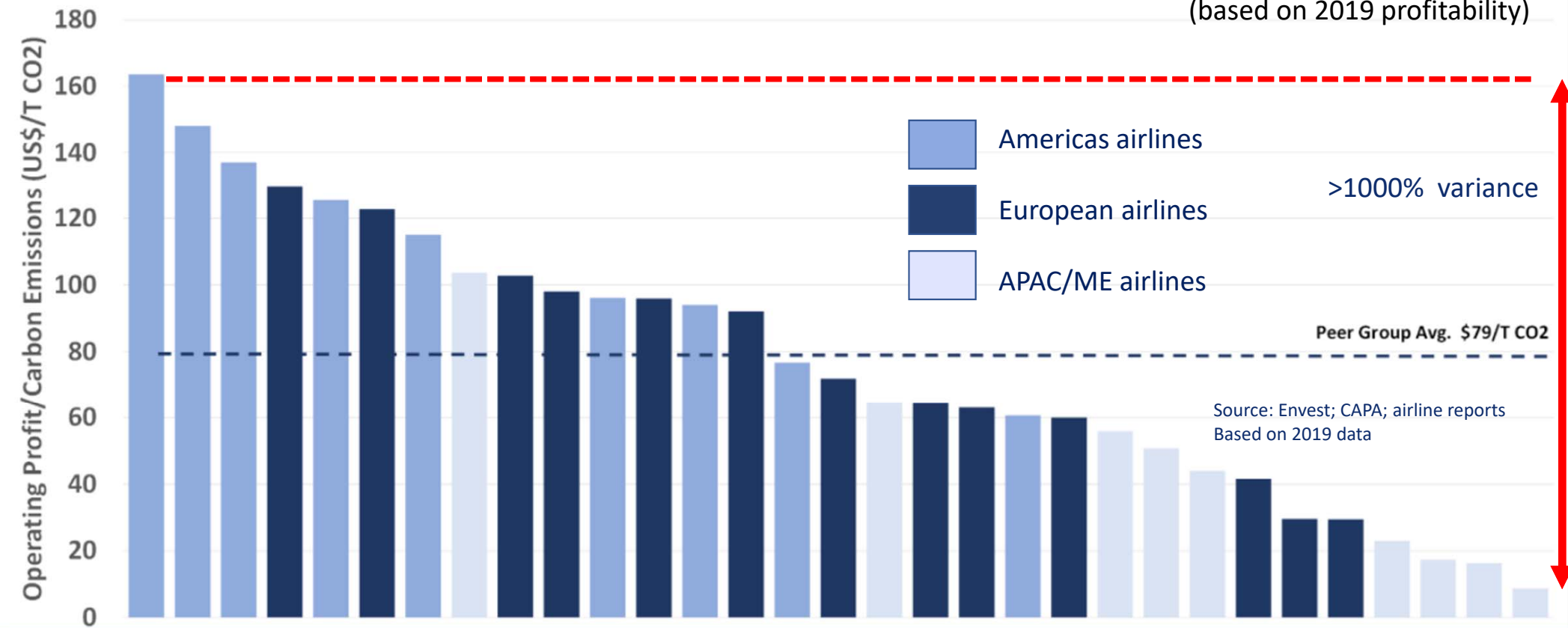
In very broad terms, the industry could reduce emissions by about 40million Tonnes CO₂, = ~ 4.5% of total for each year of fleet age

Which airlines are most challenged financially?

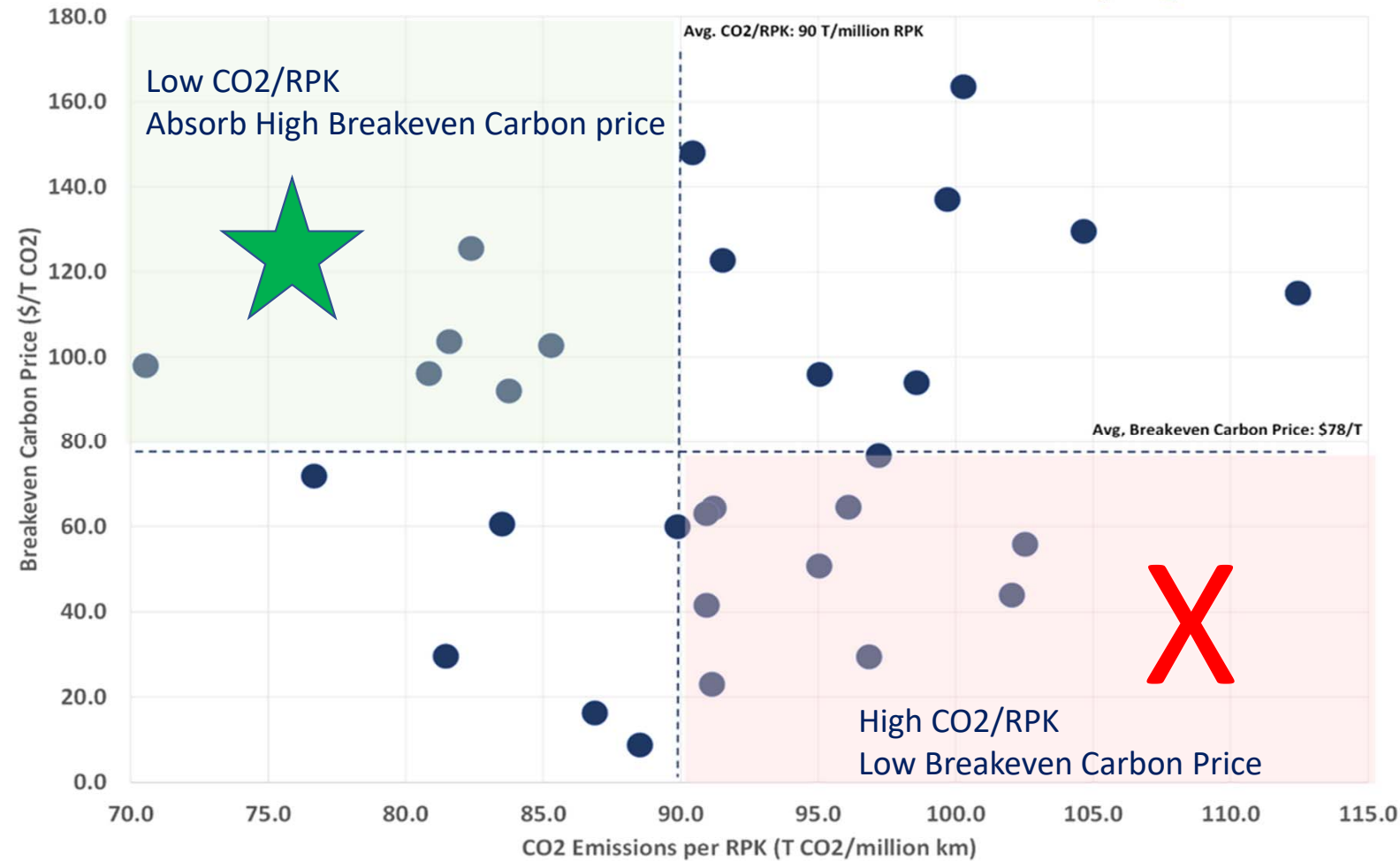
(2) Impact of carbon price on profitability

Breakeven Carbon Price

(based on 2019 profitability)



“Three-dimensional” matrix (1). Who survives?



Breakeven
Carbon price
vs
Emissions/RPK

Relative risk or
resilience of selected
airlines to a forced
acceleration to
net-zero emissions

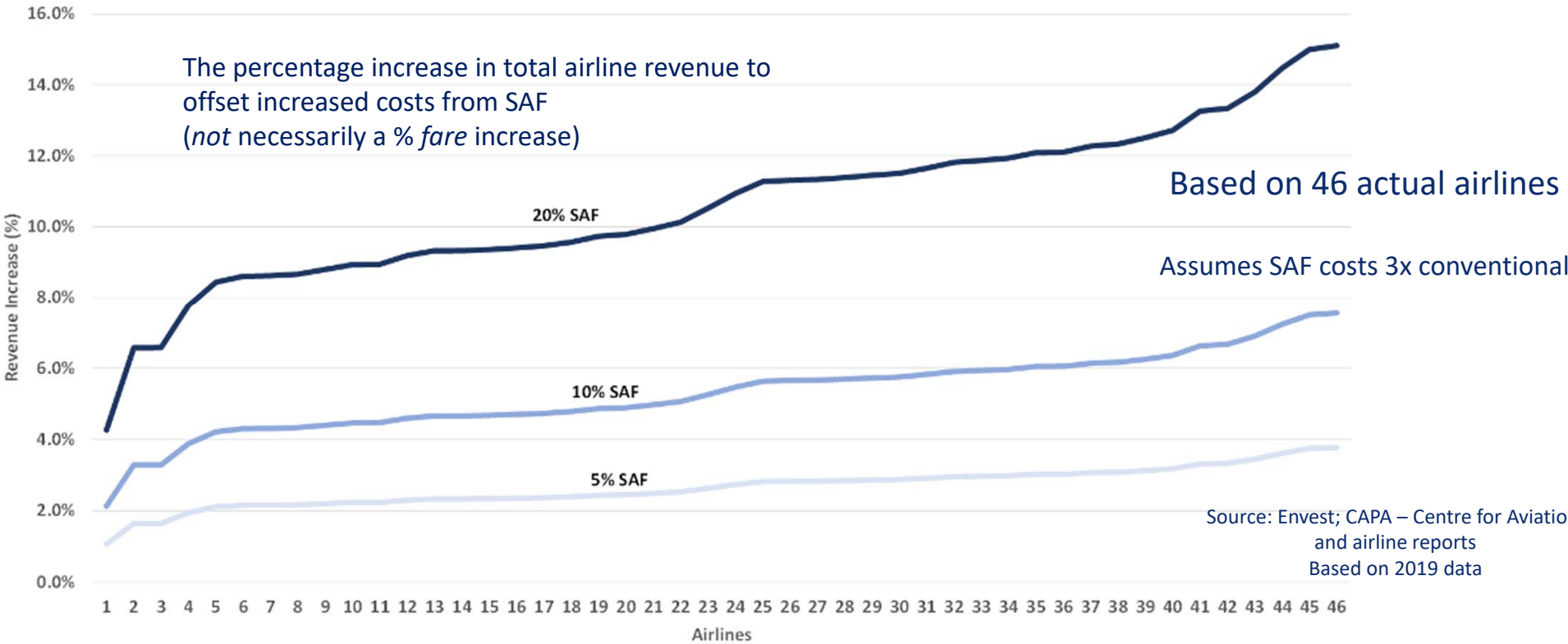
Source: Envest; CAPA – Centre for Aviation;
airline reports
Based on 2019 data

(2) Sustainable Aviation Fuels

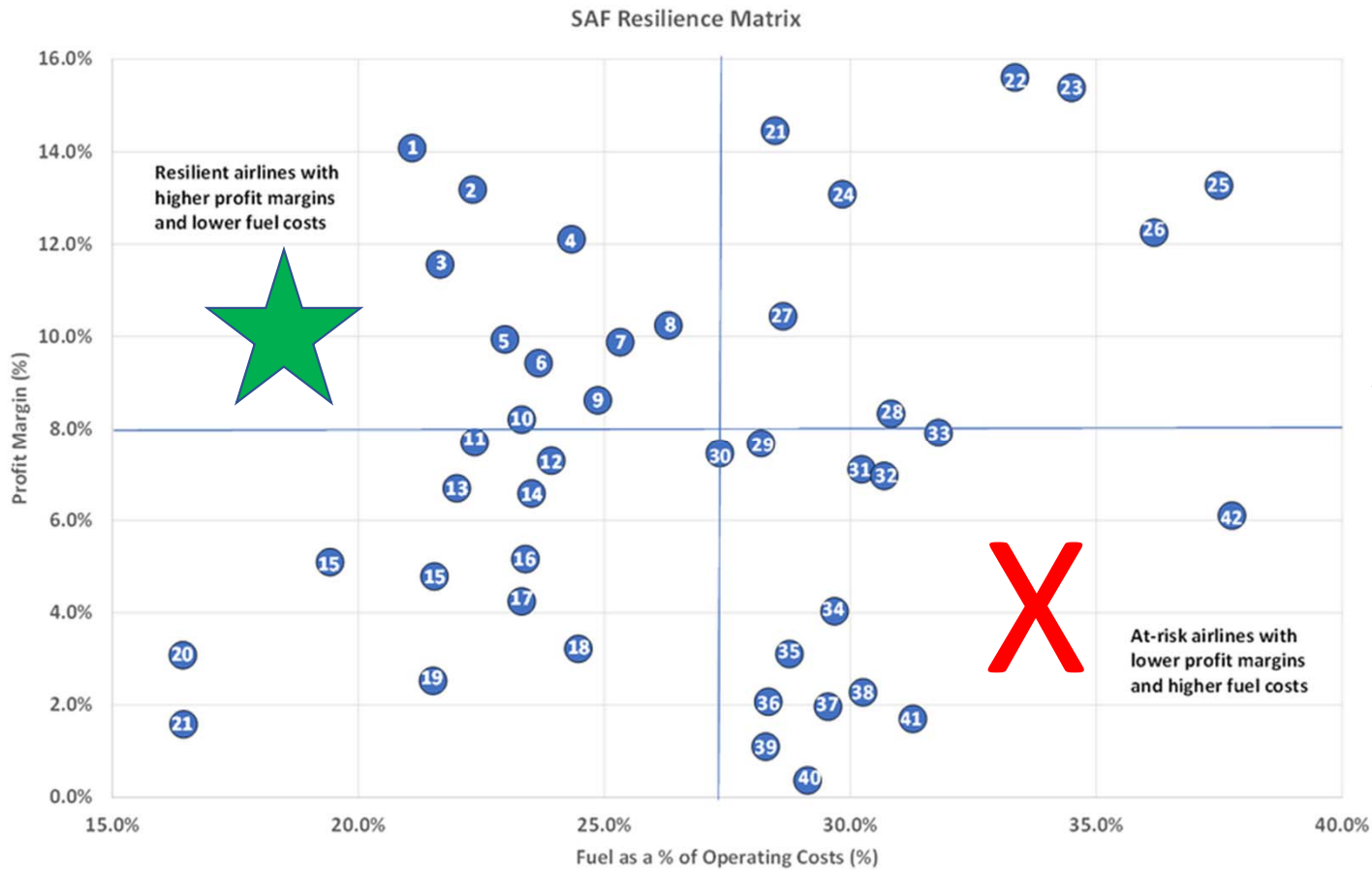
- In 2019, airlines burned 13 million gallons of SAFs
= ~0.01% of the 18 billion gallons of jet fuel burned
- 2025 industry target is ~1-2% of total burned; ~10% by 2030
- There are few producers at present. Distribution is complex
- Needs incentives – e.g. tax and investment - to convert
- Will take many years – beyond the horizon of commercial planning - to arrive at 50-80% usage
- Very expensive compared with fossil fuel (e.g. 3x) = added costs

Increased revenues needed to absorb SAF costs

Impact of Increasing SAF use - Revenue Increase Required to Maintain Profit Margin



SAF resilience matrix (2). Who survives?



Pressure testing:
 Profit margin
 vs
 Fuel as % of operating cost

Source: Envest; CAPA – Centre for Aviation;
 and airline reports
 Based on 2019 data

The airlines most impacted by SAF costs....

1. Airlines that have significant other revenues - such as cargo, loyalty programmes - would need to increase fares/rates more than these levels to generate the revenue increase
2. Airlines that have high fuel costs as a percentage of total operating costs; increasing fuel costs requires a proportionally greater increase in revenues to maintain profit margin
Most airlines at the wrong end of this curve - with need for greatest revenue increases - tend to be LCCs

In summary

1. The industry, and airlines individually, need consistent and reliable emissions data in order to respond effectively – and be *seen* to be
2. Airlines will struggle to reduce emission levels before 2030, at expected growth rates
3. Carbon pricing will be central to industry responses
4. The combination of COVID-19 and responses to environmental concerns mean there will be no “business as usual” for some years
5. Increased debt levels, reduced revenues and added environmental costs will change the shape of the industry, threatening many airlines, as well as some routes

CAPA-Envest Aviation Sustainability Report to be released October 2021

Developed to provide transparent and consistent data

Will contain:

- Airline sustainability study
- Airline data analysis and benchmarking, embracing a wide range of criteria
- Implications for corporate customers, the investment community and the airlines themselves
- Detailed 50+ individual airline metrics, ranking performance across ~15 criteria, all based on published data

Thank you
And stay sustainably safe!

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