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***Market
Implications***

*Ascend/ BLG Seminar
London
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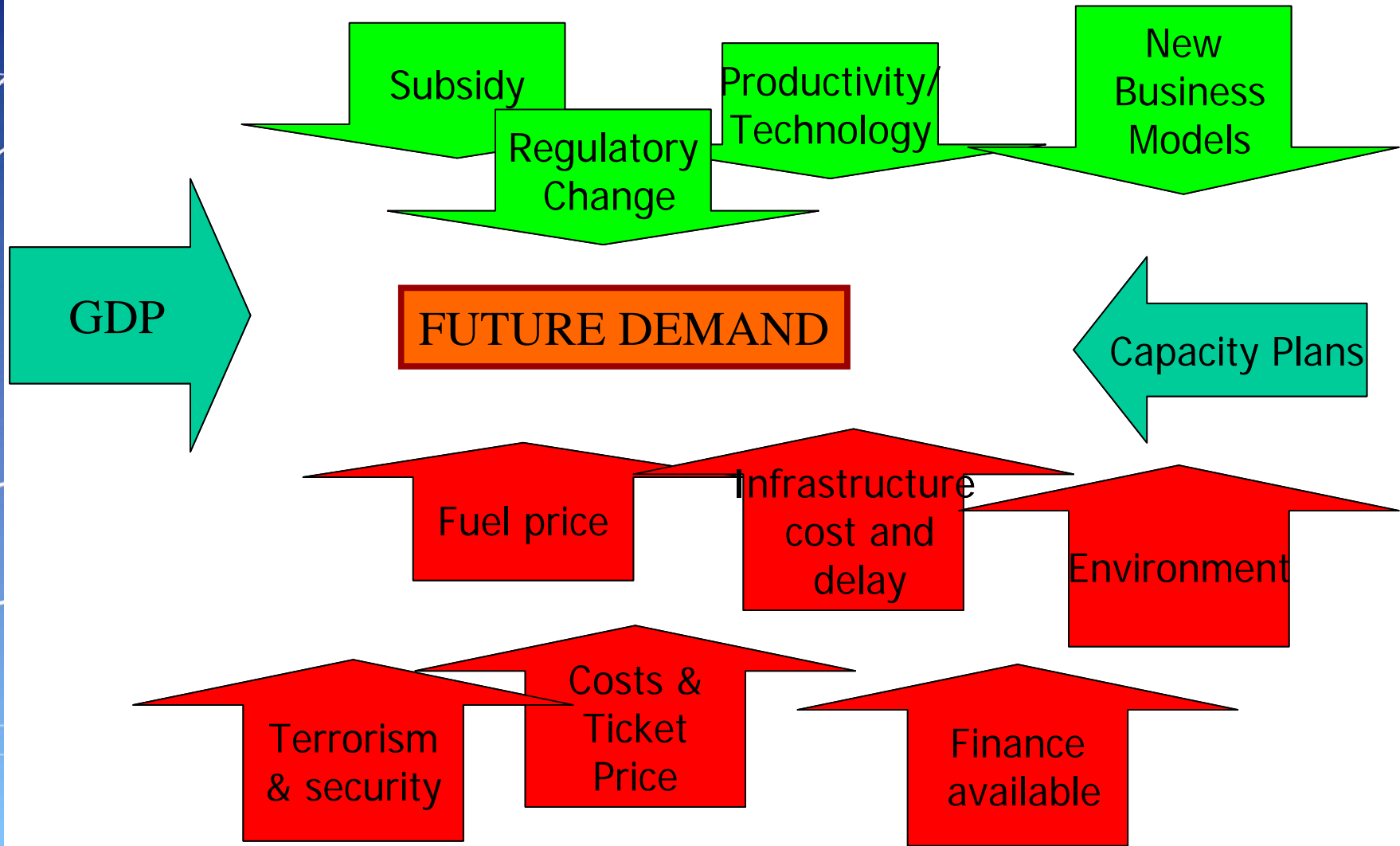
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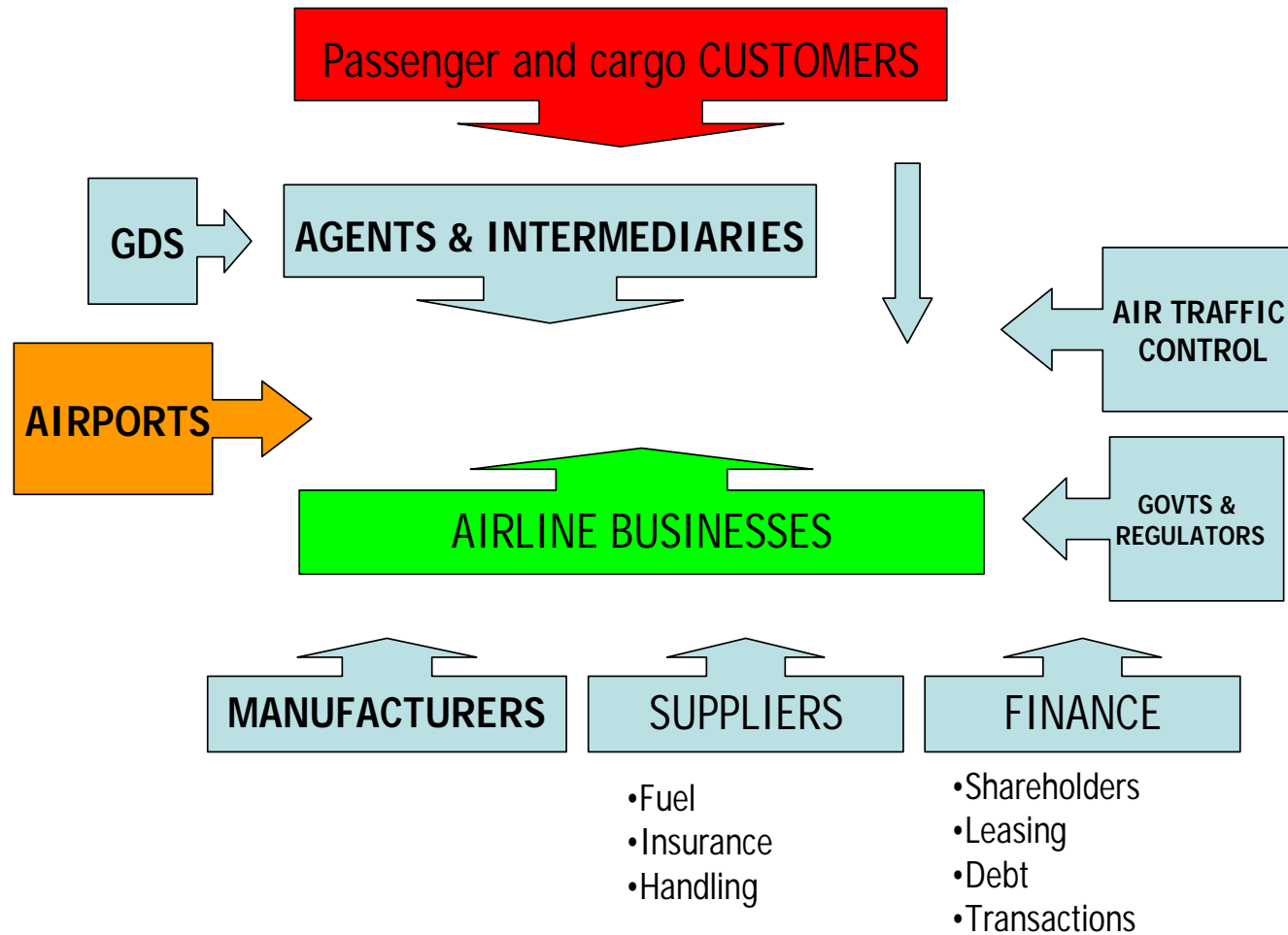
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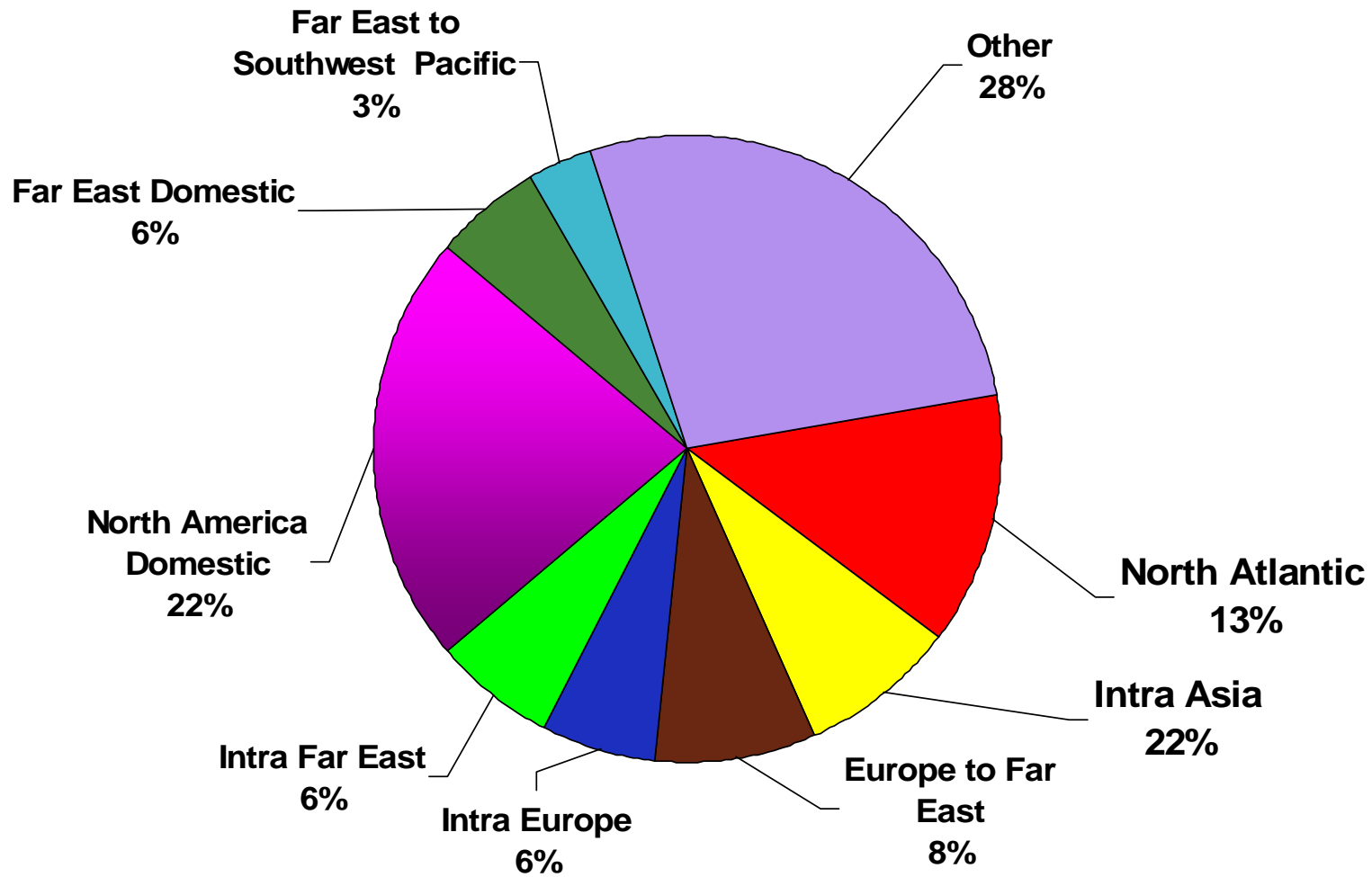
Future Industry issues



A global, interrelated business

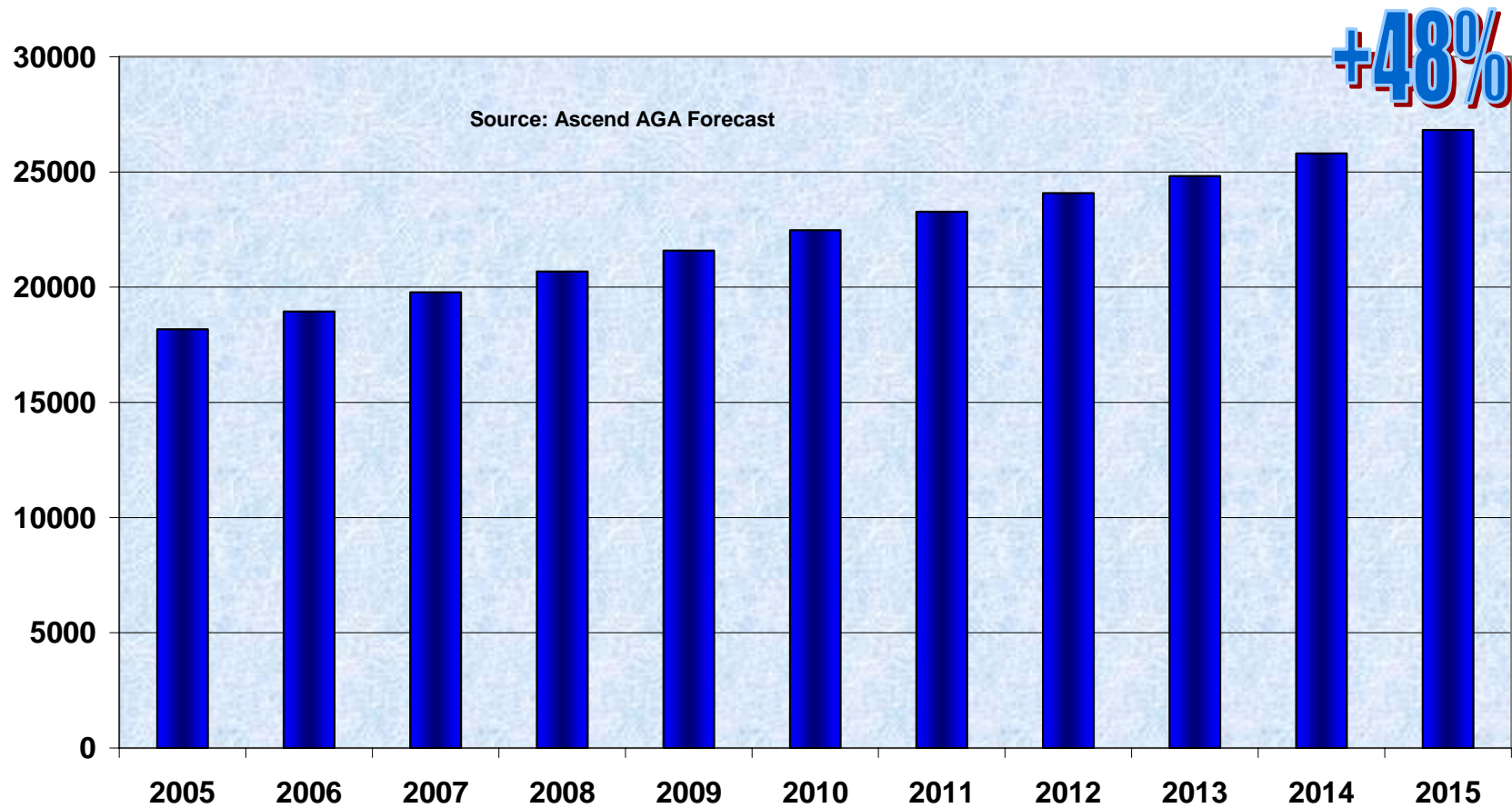


Principal Scheduled Passenger Markets



Ascend projection of fleet growth

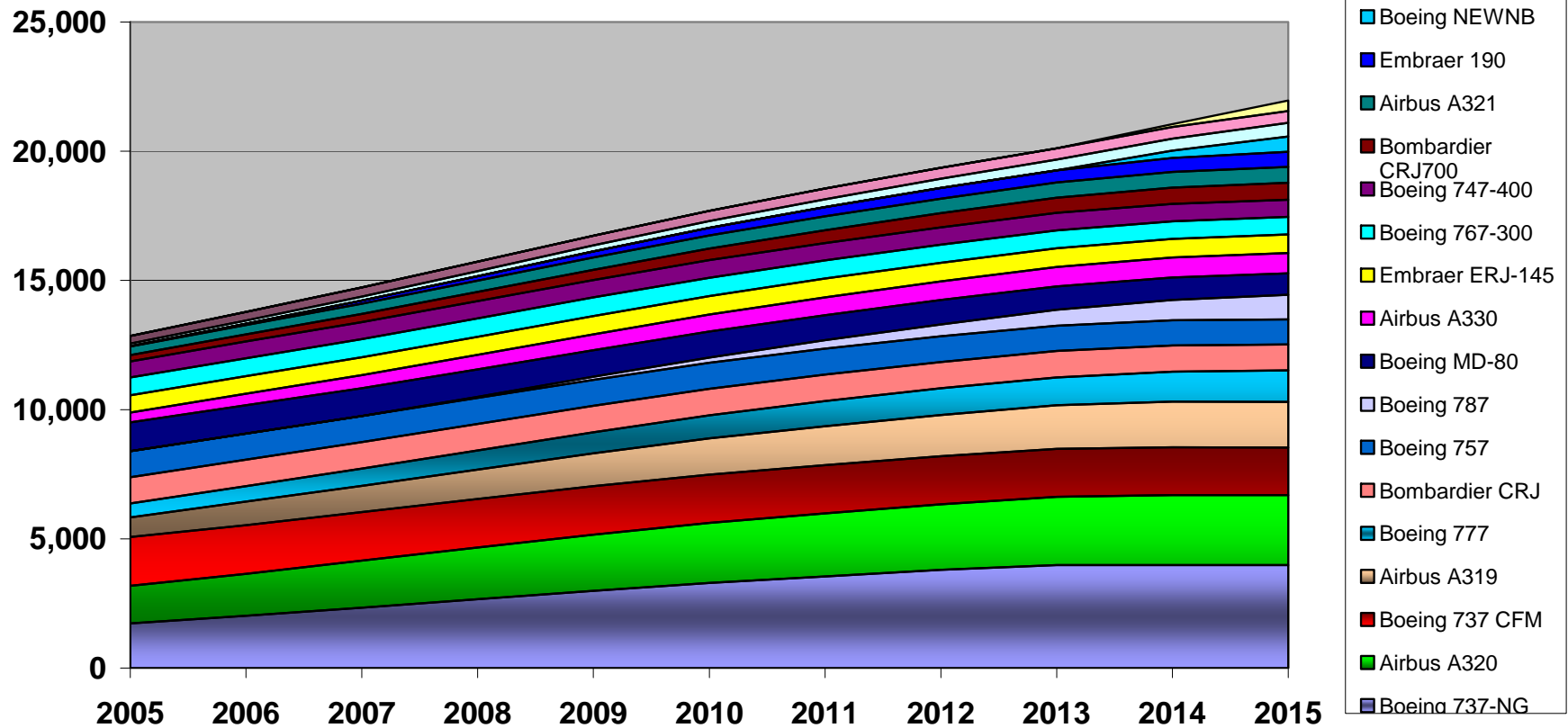
Total available jet fleet, 2005-2015



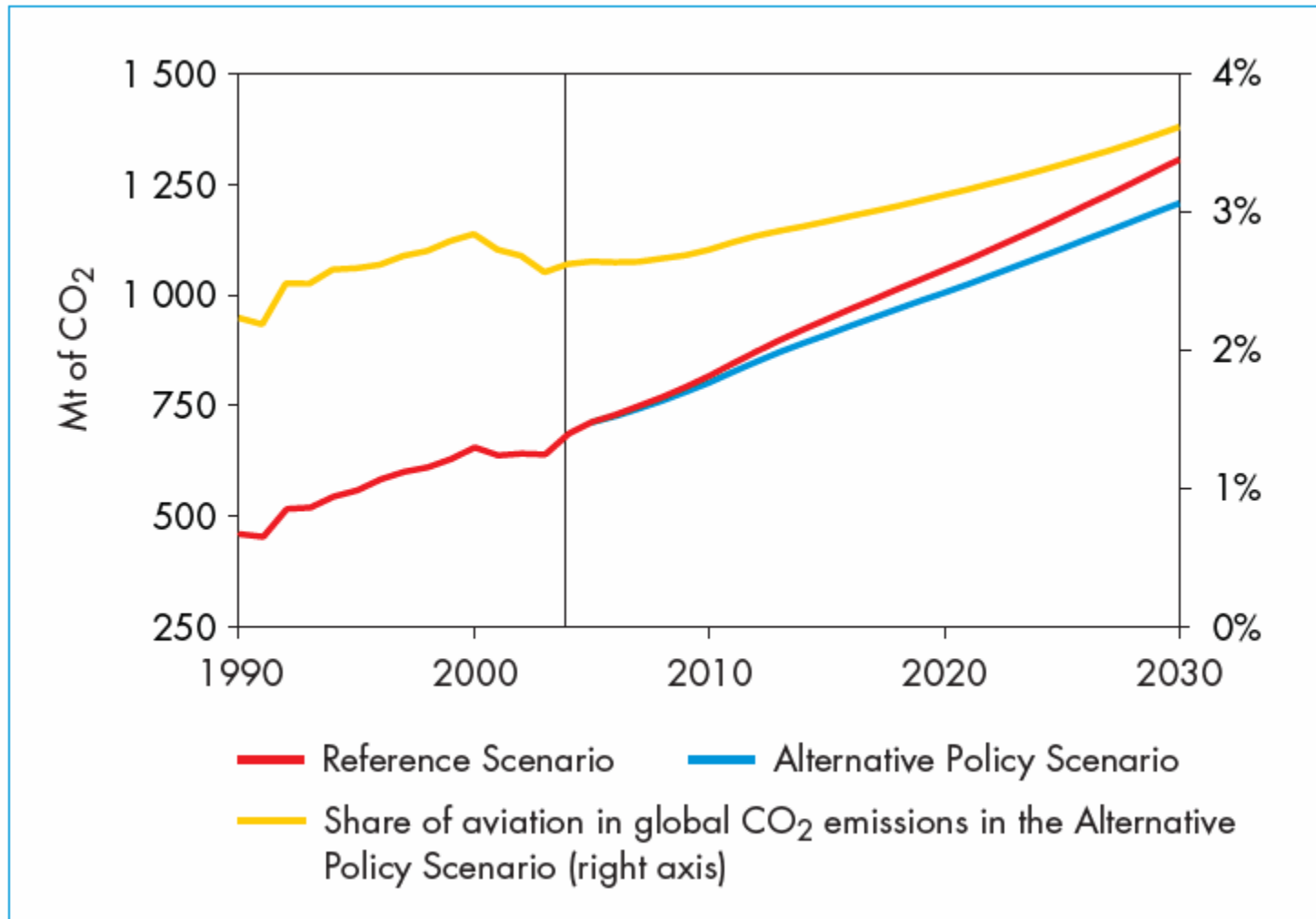
The changing fleet mix

Jet Fleet development 2005-2015 (Major types, 400+ in 2015)

(includes deliveries, retirements, conversions)



Scenarios on the CO₂ emissions of aviation



Source: IEA World Energy Outlook Nov 2006

The devil is in the detail.....

Emission calculator



■ Emission Calculator

■ General information

■ Calculate

■ CO₂

■ H₂O

■ SO₂

■ NO_x

■ HC

■ CO

■ GCD

■ MTOW

■ Cabin factor

■ pkm

■ Accuracy

Route

From (Origin) Copenhagen Apt (CPH)
To (Destination) Bangkok (BKK)
Distance, GCD 8600 km

Operator & aircraft type SAS Intercont A340-300

Max take-off weight 275 ton
Engines 4 CFM 56-5C4
Passenger capacity 245
Average cabin factor 90 %
Max range 12800 km



Fuelburn & emissions results

	Aircraft total	Per passenger	Per passenger-km (pkm)
Fuelburn	70490 kg	319.7 kg/passenger	0.037 kg/pkm
Fuelburn	88112 litre	399.6 litre/passenger	0.046 litre/pkm
CO ₂	222043 kg	1007 kg/passenger	0.117 kg/pkm
H ₂ O	87266 kg	395.8 kg/passenger	0.046 kg/pkm
SO ₂	70.5 kg	0.32 kg/passenger	0.037 g/pkm
NO _x	1266.6 kg	5.74 kg/passenger	0.668 g/pkm
HC	8.9 kg	0.04 kg/passenger	0.005 g/pkm
CO	181.7 kg	0.82 kg/passenger	0.096 g/pkm

New information sources

- **ASCEND** developing a model which will add further dimensions of:
 - Wider fleet coverage and engine type combinations
 - All airlines
 - Matrix of destinations
 - Allowance for modification of aircraft performance through time
 - Reconciliation of airline total fuel burn and individual fleet performance

Can provide accuracy in reflecting emissions, but not solve the political or economic issues

The offsetting business is up and running...

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Checkout

Your Carbon Profile	Tonnes CO ₂	Value	Offset?	
1 Flight	3.32	£ 24.94	<input checked="" type="checkbox"/>	Remove
2 Flight	3.32	£ 24.94	<input checked="" type="checkbox"/>	Remove

Recalculate your total CO₂ and cost [recalculate](#)

Your offset total includes **6.64 tonnes** of CO₂
To offset the 2 selected item(s) will cost **£49.87***

Tick or untick then recalculate to alter this total. [buy offsets](#)

* There is a minimum offset value of £5

Offset my emissions

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- [quick offsets](#)
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.....And generating revenues



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Description **6.64 tonnes of CO2 Emissions Offset Payment**

Amount **£49.87**

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Variables in 'Retail' Emissions Calculation

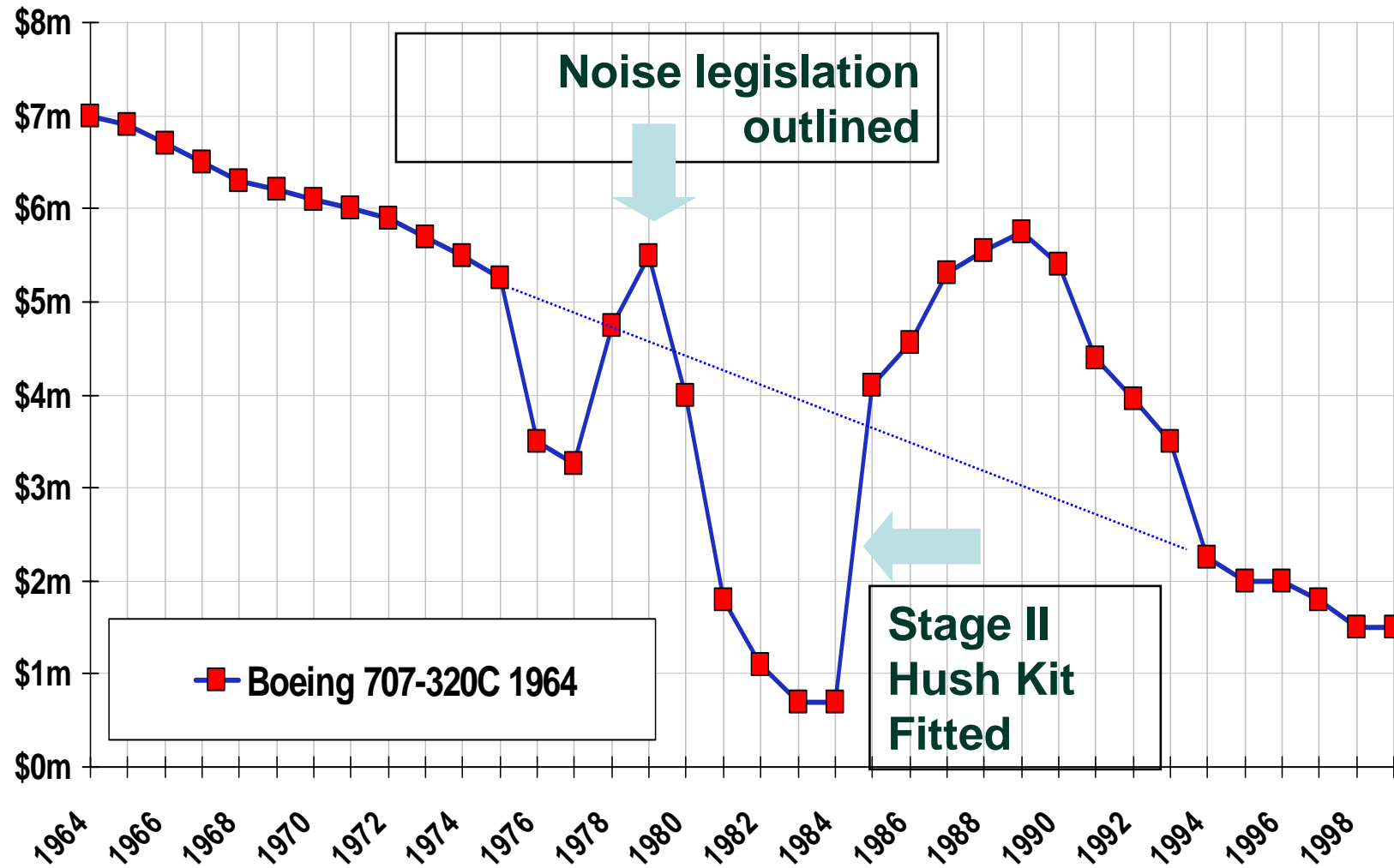
- Route area coverage (e.g. EU/ non EU)
- Average Sector Distance travelled (no. of movements)
- Capacity/ load factor
- Aircraft type/ engines
- ATC infrastructure, delay etc
- Climate

Question of the trade off between:
The importance of accurate price signals
And
Complexity/cost of pricing system

How will aircraft values be impacted?

- Timing/Introduction of Legislation - Impact moderate if distant, it is the unexpected which causes issues. Recession will exacerbate impact.
- Regional impact - if EU only, aircraft are very mobile assets
- Likely encouragement of investment in newer technology
- The market has already factored in impacts to current and future values.
- May enhance values of newer 'in production' aircraft. Depending on regulations, could increase values of larger aircraft?

Lessons from history - Noise Legislation



Summary

- Likely need for independent measurement
- Consumer impact directly influenced by price changes
- Impact may well be less than recent fuel price increase?
- Problem of global issue addressed at regional level
- Voluntary systems in existence
- Aircraft value impact complex, and hard to identify separately

For further information:

Email: peter.morris@ascendworldwide.com

Thank you for your attention

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