NECTAR Cluster 1 workshop
on
Integrated Transport –from policy to practice

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The Future of Air Transport

Interim results Part 1: Present carbon dioxide emission levels in the air transport market

13th Sep 2008
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Estimated Carbon emissions

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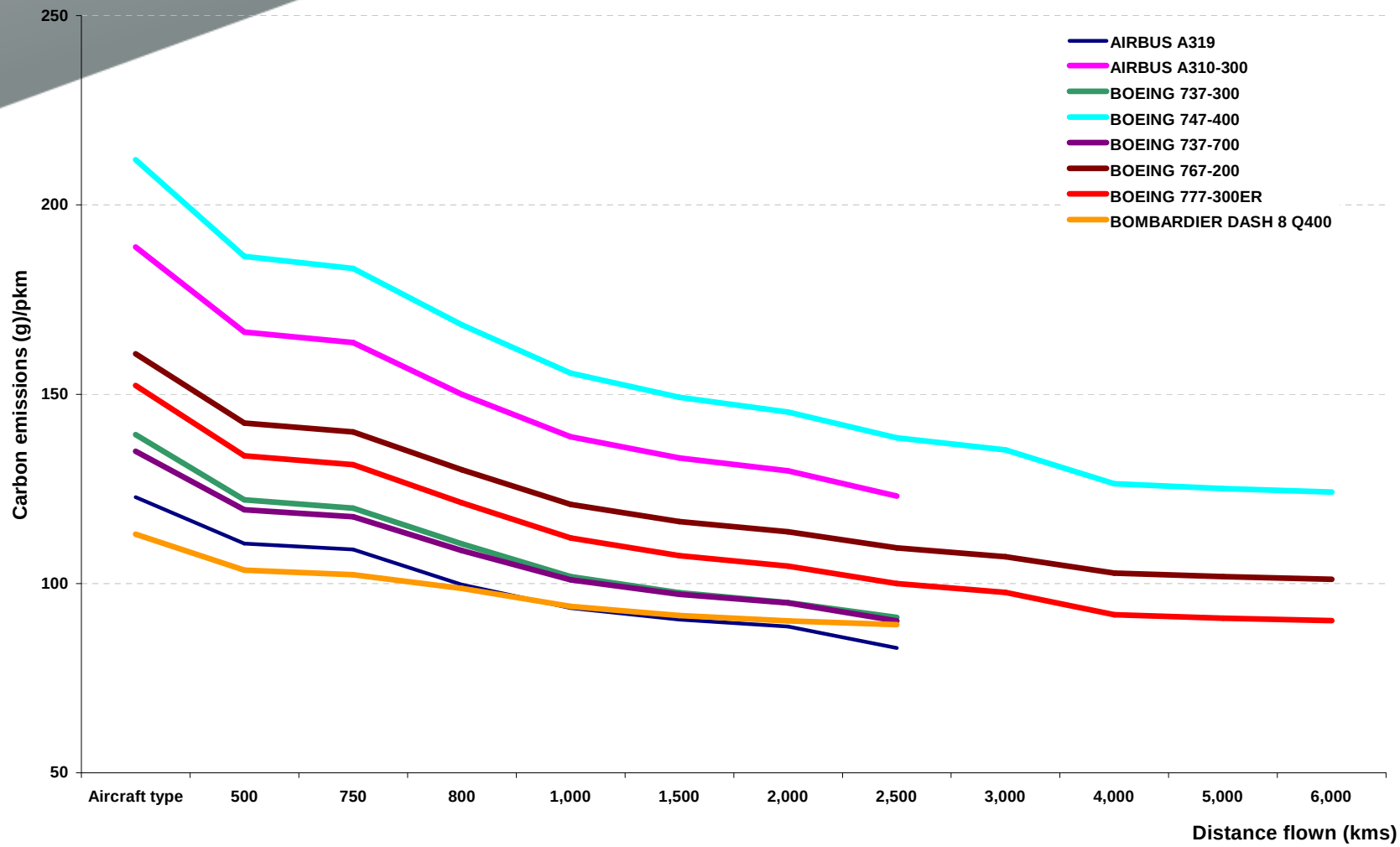
	Short haul		Medium haul		Long distance	
	Distance	Carbon emissions (g/pkm)	Distance	Carbon emissions (g/pkm)	Distance	Carbon emissions (g/pkm)
European Commission (1998)			European average	200		
Pearce and Pearce (2000)	Short haul flight (926 kms)	3.9			Long distance (6,482 kms)	6.4
Gösseling et al (2005)	European Union (< 2,000 kms)	140	Intercontinental routes (> 2,000 kms)	120		
Peeters, et al (2007)	< 500 kms > 500 < 1,000 kms > 1,000 < 1,500 kms	206 154 130	> 1,500 < 2,000 kms > 2,000 kms	121 111		
Ross (2007)	< 1,000 kms	450	> 1,000 < 5,000 kms	300	> 5,000 kms	320
Defra (2006, and 2007)	Domestic: 463 kms	158	International: 1,108 kms	103	6,482 kms	106
CE Delft (2005 and 2007)	480 kms	175	1,402 kms	107	6,404 kms	103

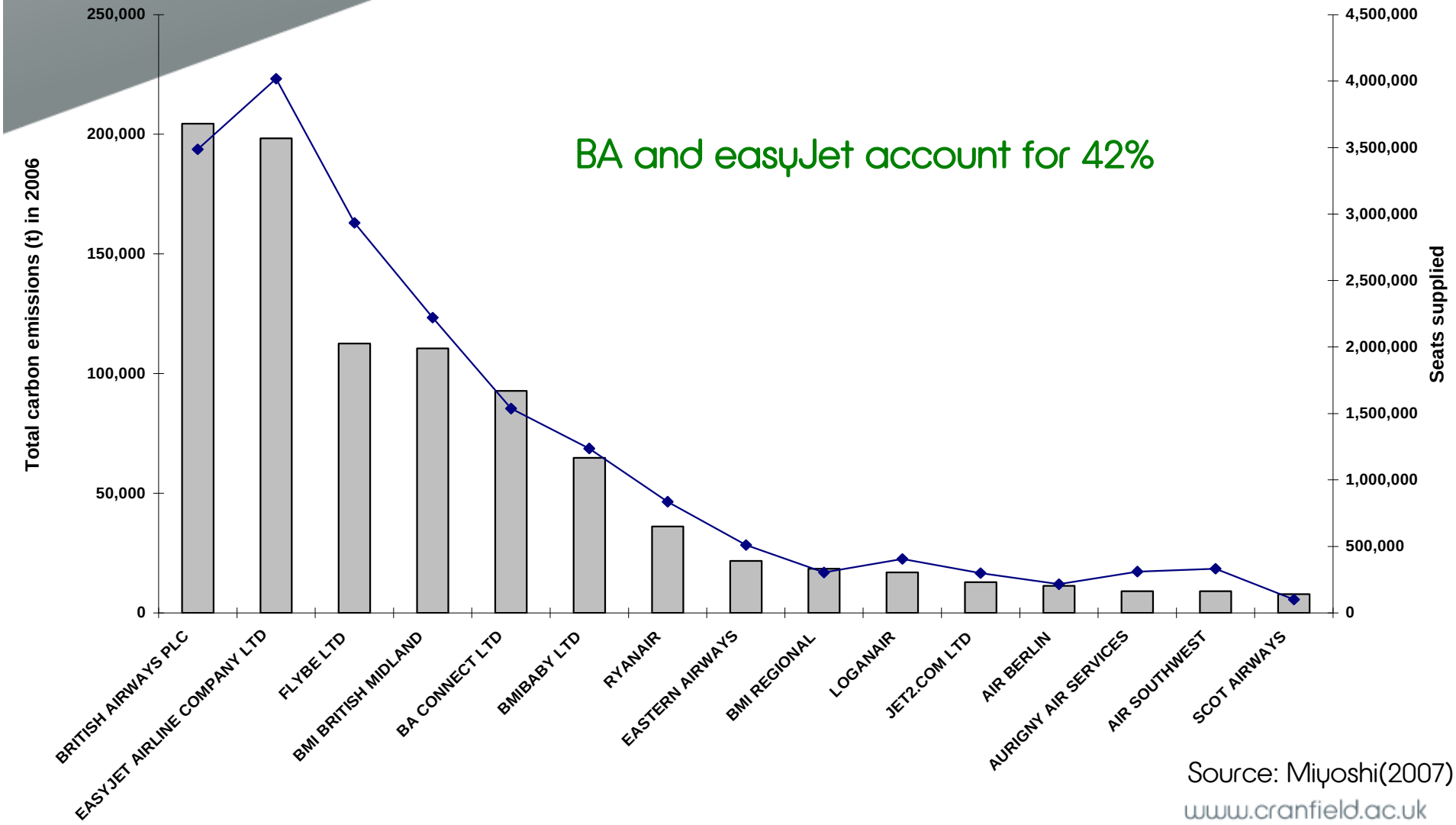
By aircraft type



Source: Miyoshi(2007)

UK domestic route

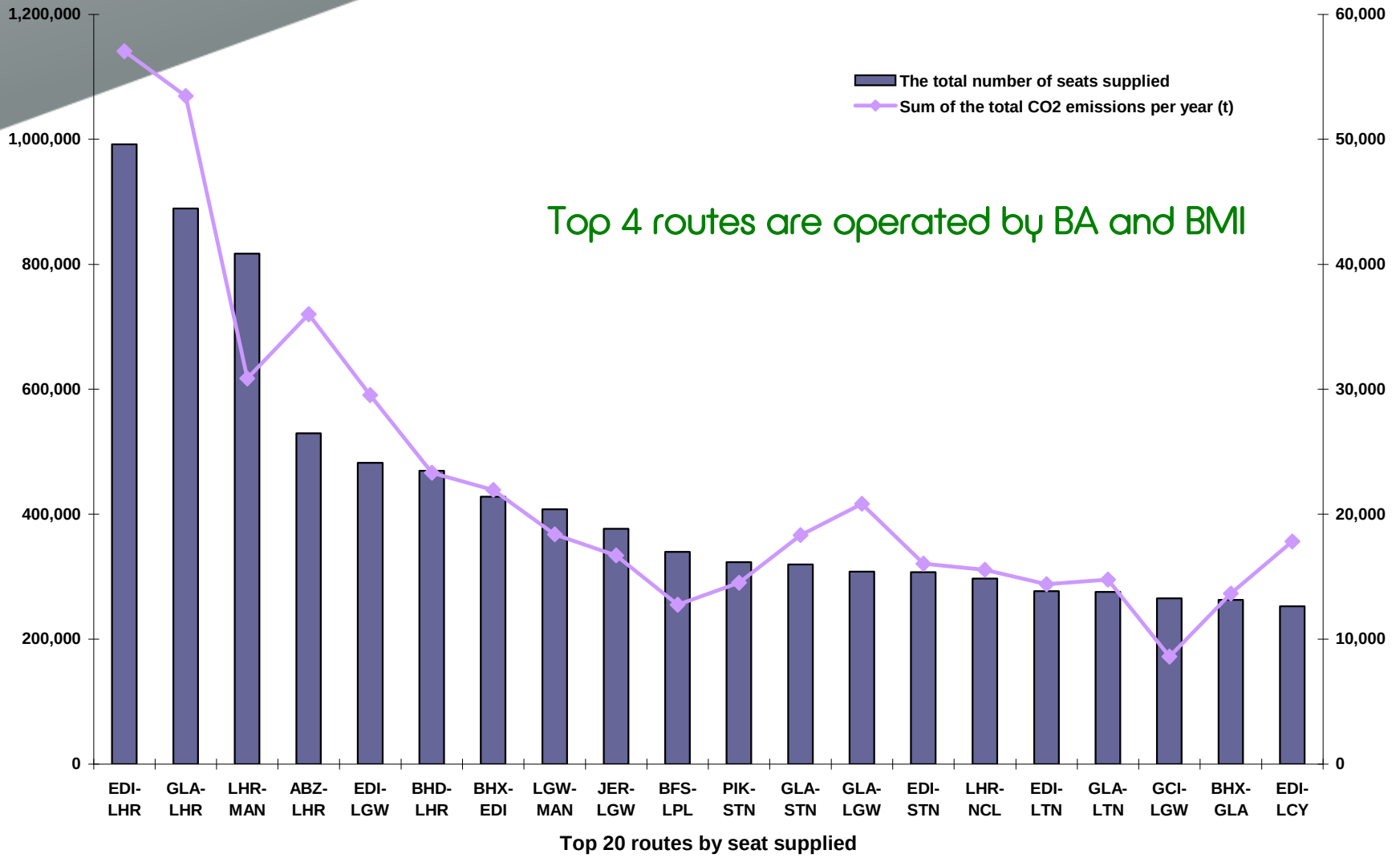
- Body copy, Arial 26pt



Source: Miyoshi(2007)

UK domestic route

- Body copy, Arial 26pt



Intra-EU serving UK route

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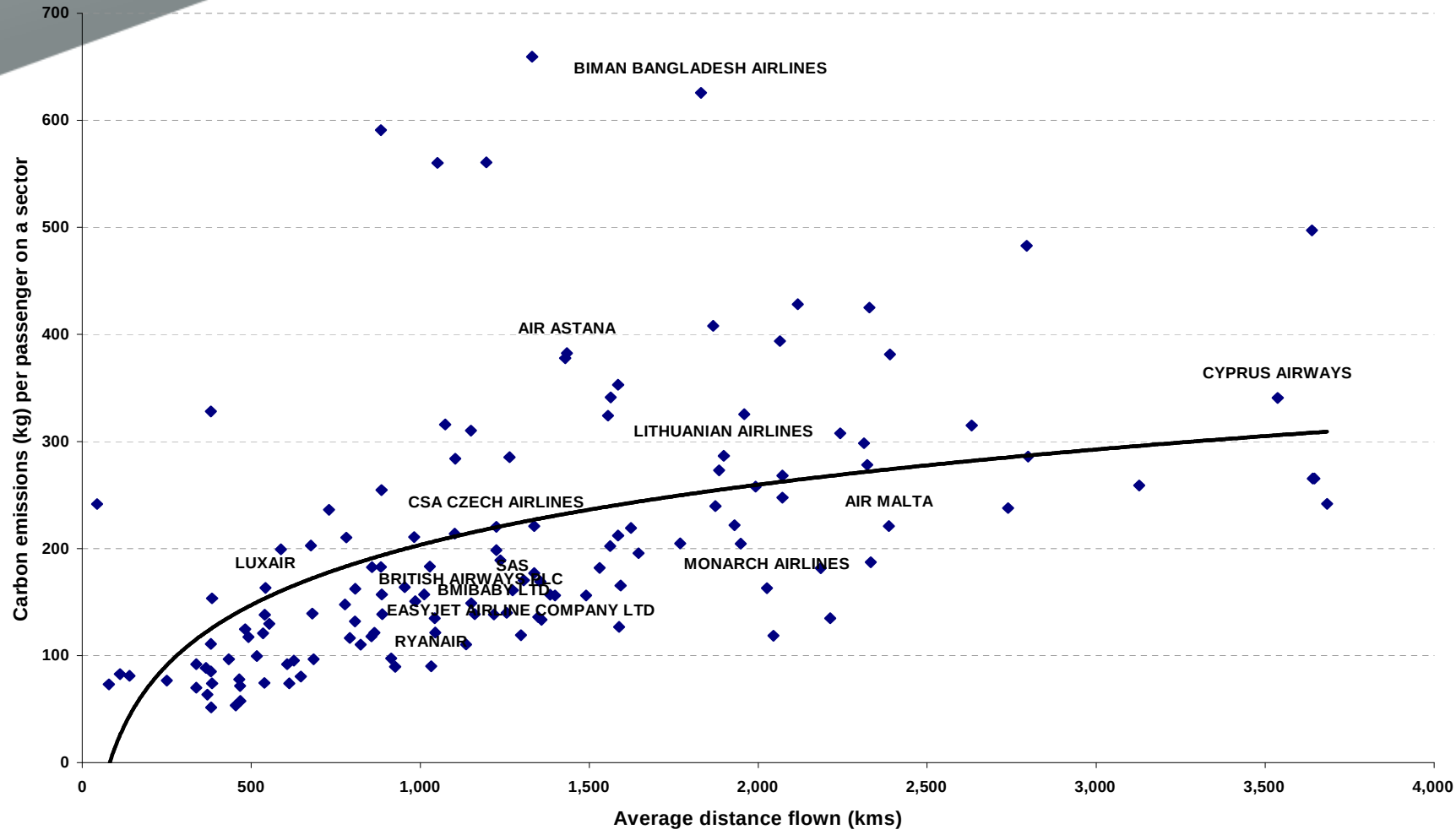
Most airlines < 2,000kms distance flown

Most airlines < 200g/pkm CO_2 emissions



Source: Miyoshi (2007)

Intra-EU serving UK route

Four groups

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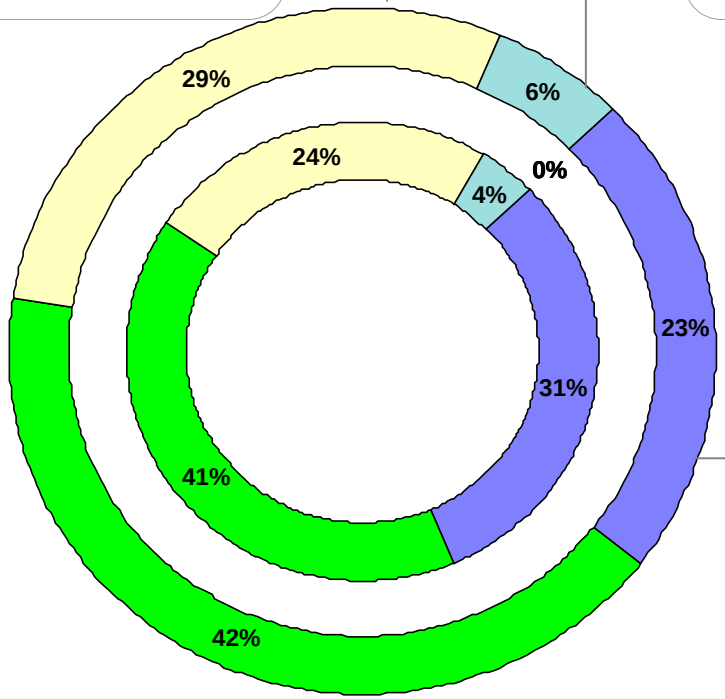
Average carbon emissions: 187g/pkm
Average distance flown:659kms

Load factors: 68%

Average carbon emissions: 299g/pkm
Average distance flown:566kms

Load factors: 57%



Average carbon emissions: 87g/pkm
Average distance flown:1,6974kms

Load factors: 81%

Load factors: 74%

Average carbon emissions: 123g/pkm
Average distance flown:1,236kms

Inside ring: Shares of total number of passengers carried
Outside ring:Shares of total carbon emissions

Source: Miyoshi (2008)

Intra-EU serving UK route

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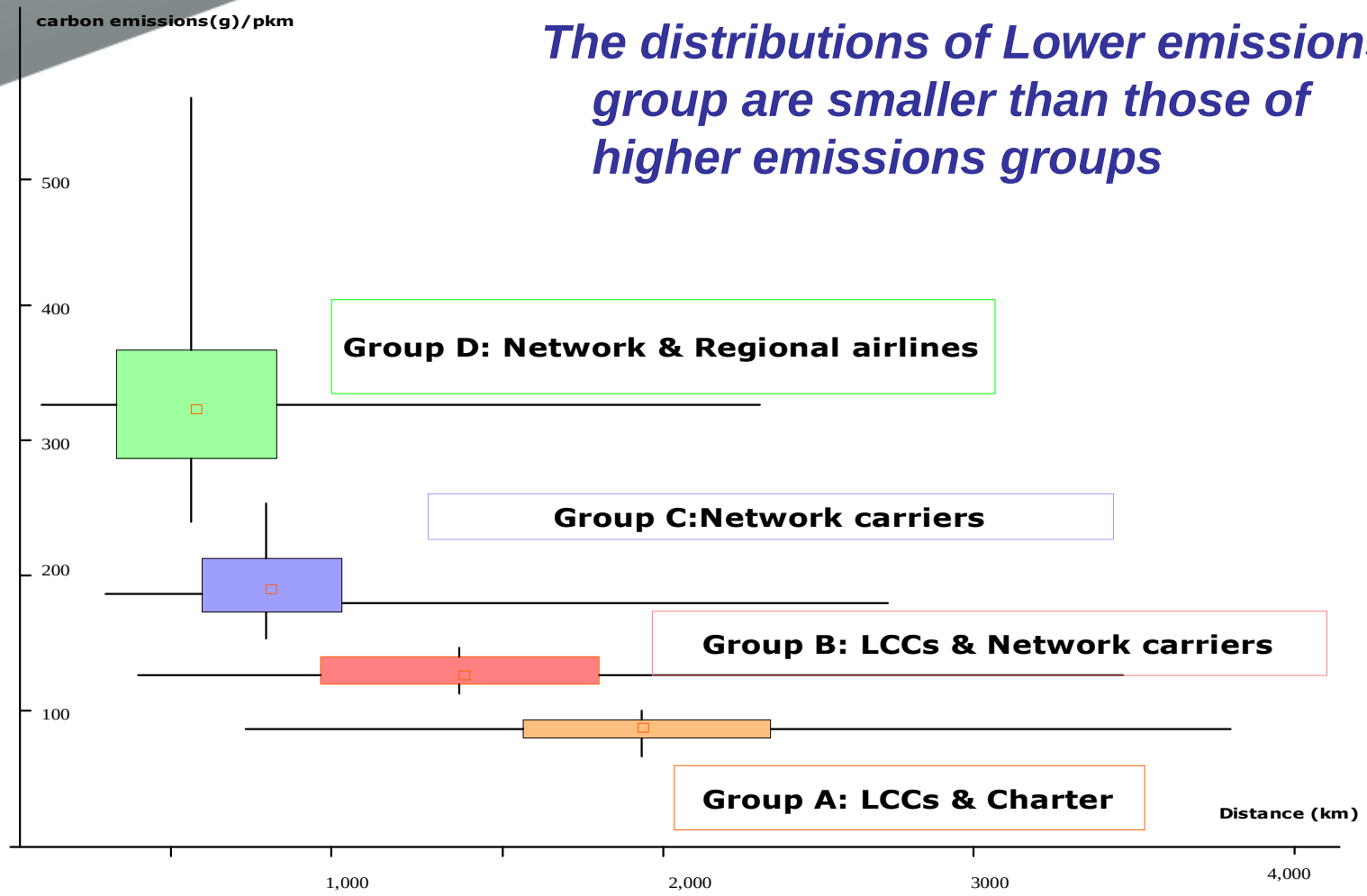
The distributions of Lower emissions group are smaller than those of higher emissions groups



Source: Miyoshi(2008)

North Atlantic route

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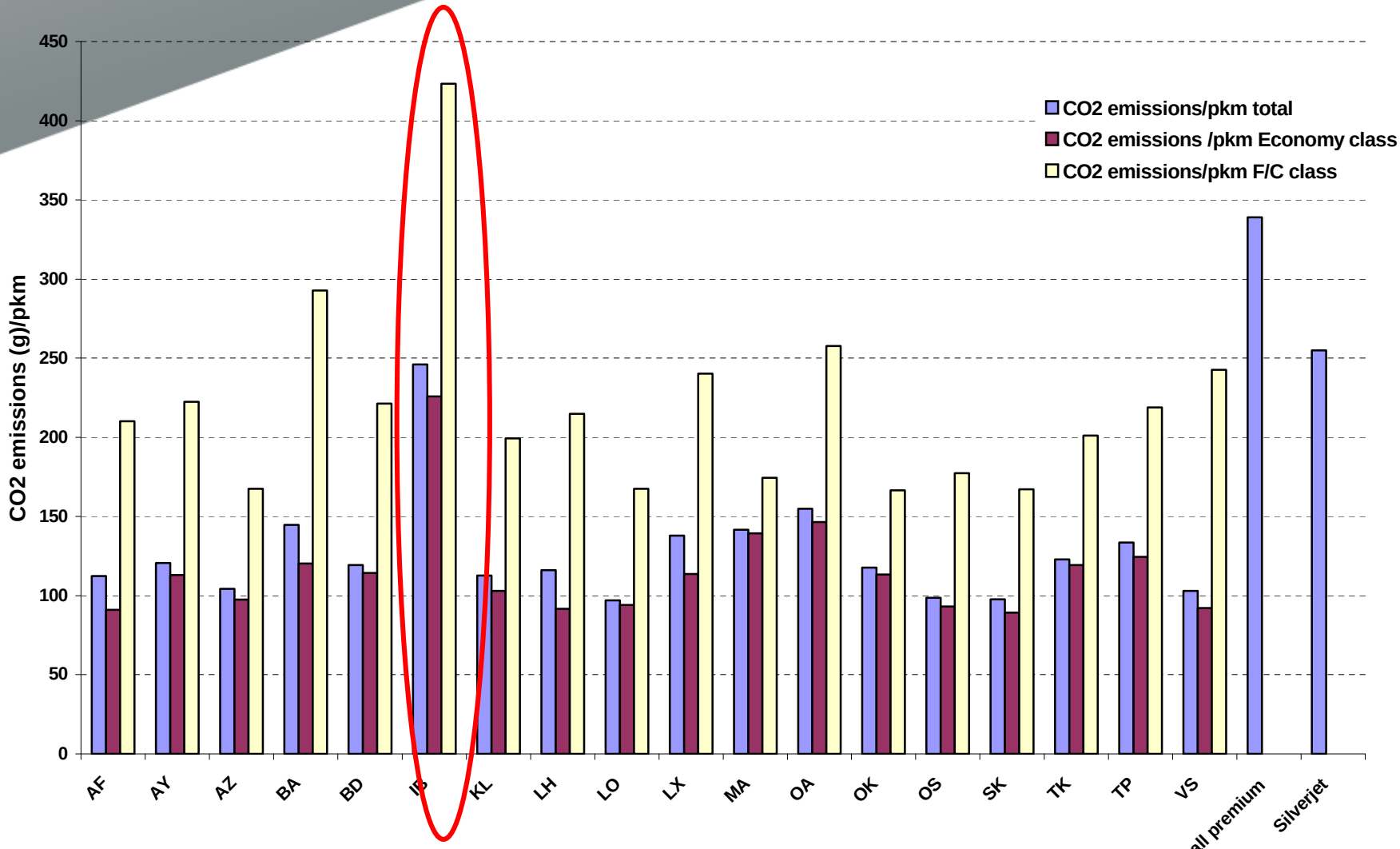
Estimated average CO2 emissions by airlines (average stage distance: 6,825 kms)



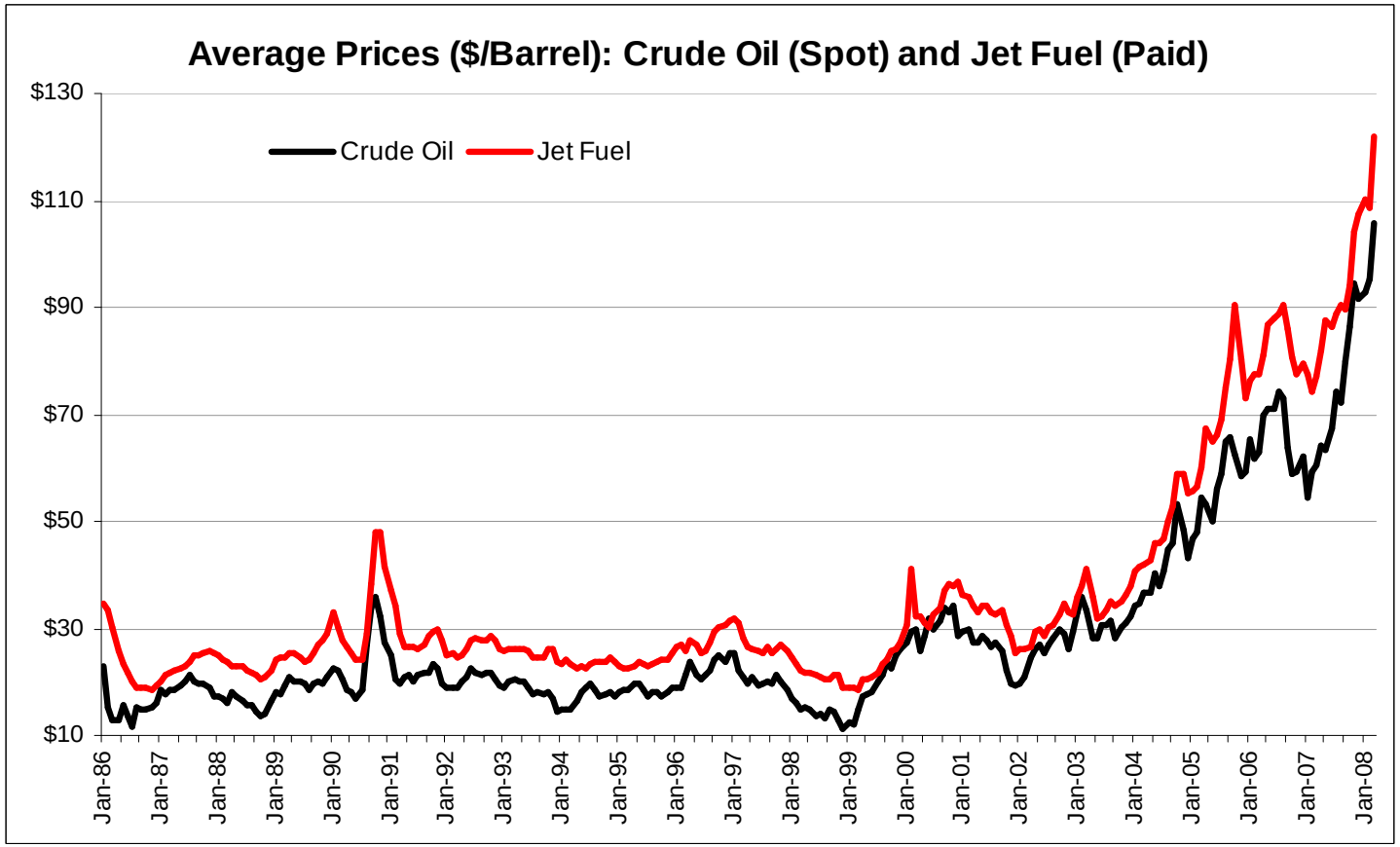
Source: Miyoshi (2007)

The current situation

- The different results are significantly related to fuel efficiency of aircraft, the distance flown, seat configuration and load factors.
- The large gaps in emissions levels between the markets, airlines and seat class.
- It highlights on the differences in emissions of airline business models and route selections according to the fuel efficiency and operation performance.

MTOW based aircraft factor for the Aviation Duty and three banded distance factors are appropriate or not?

Jet Fuel Cost



Source: US Air transport Association (2008)

Primary aim

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The primary aim of this study is to consider future air transport business strategies that lead to competitive advantages and improved business practices by focusing on the environmental sustainability

Objective 1

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- To identify the relationship between the airline business models and their environmental performance.

✓How do the different business models influence environmental performance and vice versa?

✓What are the ramifications of the business models?

✓Which airline business models are least environmentally damaging?

✓What are the potential changes of approach/practice to current business models in order to improve business performance by developing the environmental performance?

Objective 2

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- To examine the impact on the airline market and business strategy of external factors, such as environmental policy, aviation duty tax and fuel prices.

✓How will airlines be affected by the environmental policy and aviation duty tax and fuel prices?

✓How will the methodologies of the EU ETS (Emission Trading Scheme) affect the airline strategy and market?

Objective 3

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- To identify sustainable airline business strategies for the future

✓How is the airline business performance evaluated and related to the environmental performance?

✓How and why does the environmentally sustainable strategy lead the business sustainability?

✓How can air transport industries implement the carbon neutral growth?

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Thank you so much