



# **Carbon Offset Schemes for Aviation: Inconsistent Supply and Weak Demand, What Hope for the Future?**

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**Joint Actions on Climate Change Conference**

**Theme 4: Governance & Climate**



# OMEGA - Carbon Offset Study

- Carbon offsetting is a mechanism for compensating for greenhouse gas emissions generated by a particular activity by paying for equivalent emissions savings or reductions to be made elsewhere in the economy. This project aimed to review current services to air passengers and explore passenger attitudes to offset:
  - Offset service provider review
  - Passenger survey



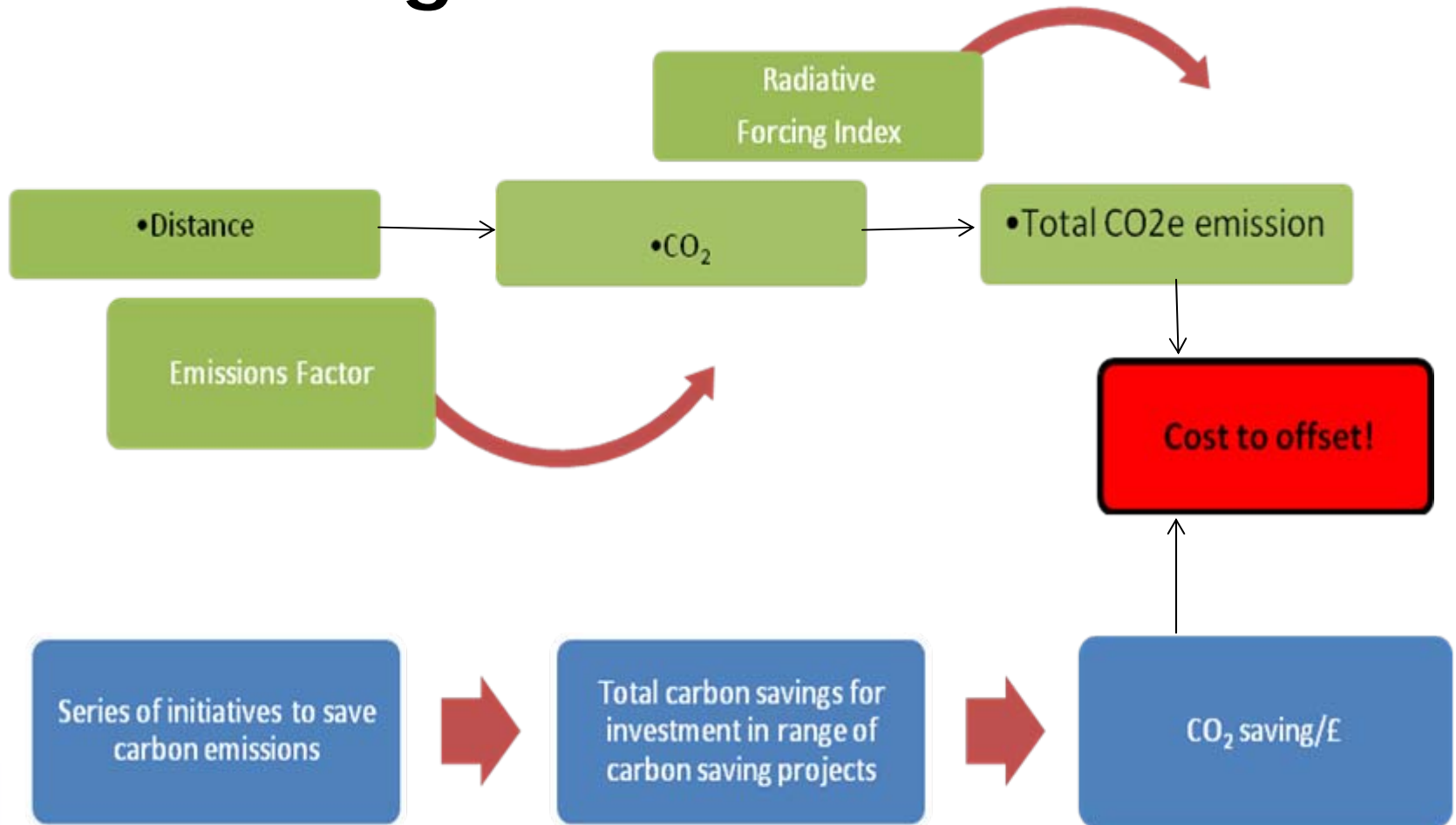


# Review of Offset Providers

- Web sites of 42 online providers of aviation offset services were examined in November 2007 This market is expanding rapidly with new providers emerging every month
- Revealed considerable inconsistencies in the nature and quality of service provision



# The Offset Process for Air Passengers





# Provider review – key findings

- ***Carbon Calculators:*** Inconsistent outcomes and a lack of explanation of underlying assumptions. DEFRA and ICAO attempts at standardisation. Complex models
- ***Unit price of carbon:*** Prices varied considerably from £2/tCO<sub>2</sub>e to £18/tCO<sub>2</sub> - influenced by nature of carbon saving investments and administrative costs
- ***Cost to offset:*** Journey offset costs varied widely, reflecting unit prices and carbon liability calculations
- ***Assurance:*** mine-field
- ***Transparency:*** performance inconsistent







# The Carbon Calculator

- Carbon Calculators determine the emissions from a given flight
- Ideally these fulfil three requirements:
  - educate the consumer
  - user friendly
  - accurate
- Above all underlying assumptions should be made clear given the possible range of complexity.





# Elements of the Carbon Calculator

Distance travelled x an emissions factor = carbon emitted

- Consistent distance outcomes based on great circle distances with some adjustments for route planning
- Significant variation in EF applied as revealed by our sample journeys from Heathrow to Paris and Sydney





# Emission Factors

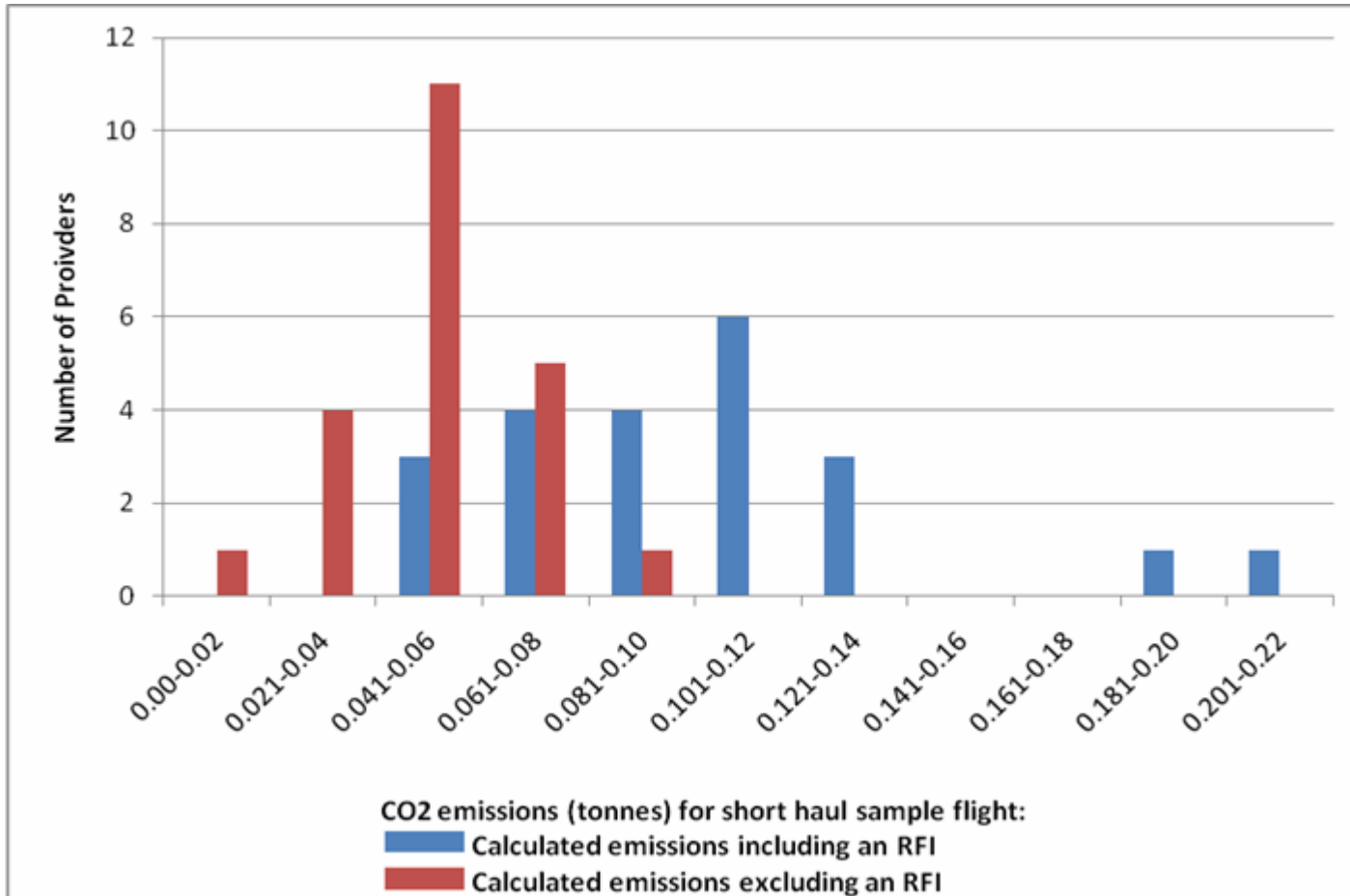
- Varied in relation to:
  - Use of RFI (1, 1.9, 2.7 and 3)
  - Appropriate load factors
  - Sample aircraft used to compose the operating fleet
  - Variations in fleet mixes
  - Application of an uplift factor
  - How freight is accounted for
  - Average seating configurations
  - Allocation of carbon liabilities between different seating classes





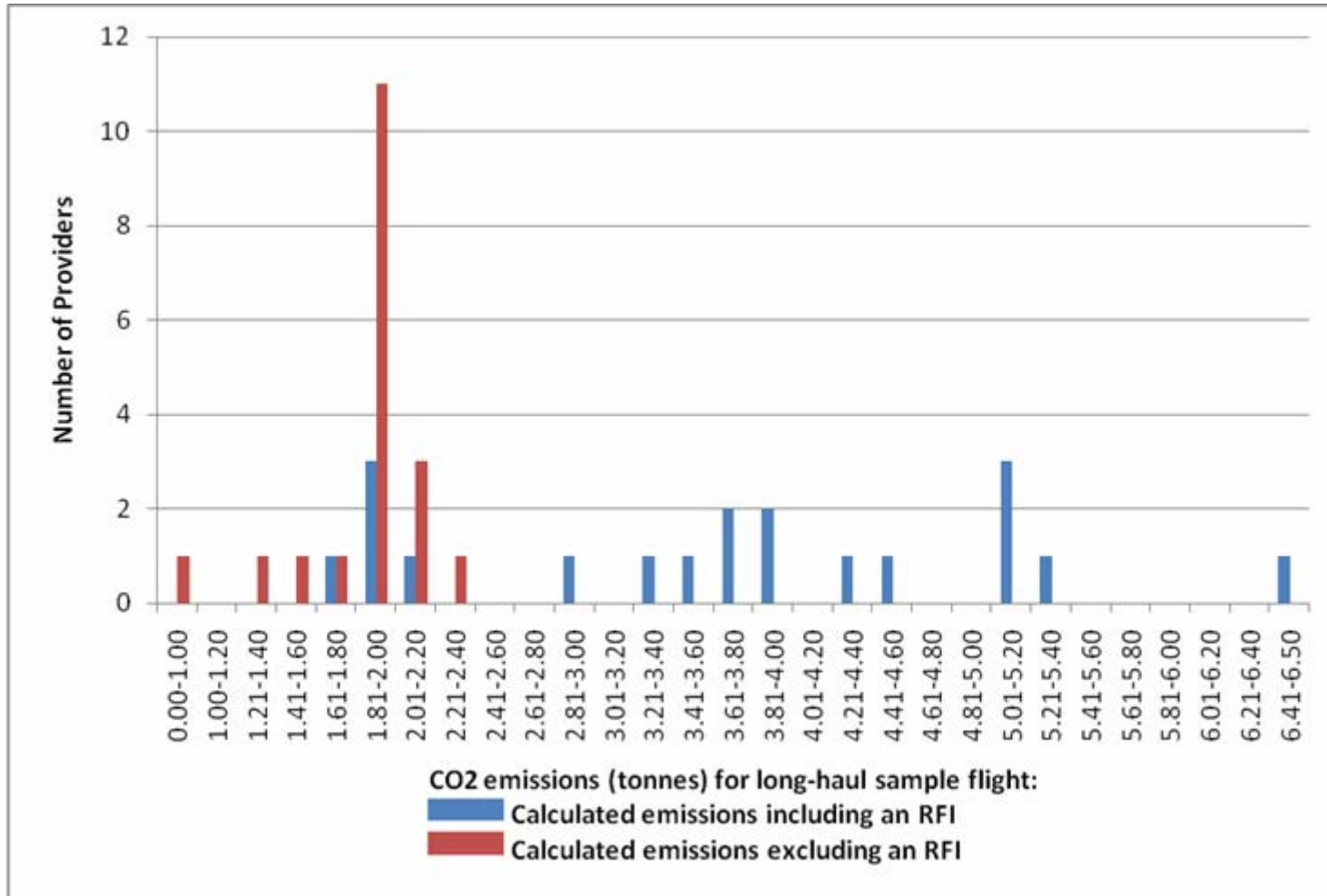


# LHR to CDG Emissions





# LHR to SYD Emissions





# ICAO and DEFRA EF Compared

Calculator	Emission Factor (gCO <sub>2</sub> /pkm)	Total Emissions for sample flight to Sydney (tCO <sub>2</sub> )
ICAO (for economy seat)	Variable*	1.43
DEFRA long-haul average (Option 1) <sup>1</sup>	81.5	1.39(1.51)
DEFRA long-haul economy (Option 1)	59.5	1.01 (1.10)**
DEFRA long-haul average (Option 2)	100.9	1.71 (1.87)
DEFRA long-haul economy (Option 2)	73.7	1.25 (1.37)





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# The Cost of Offset Products

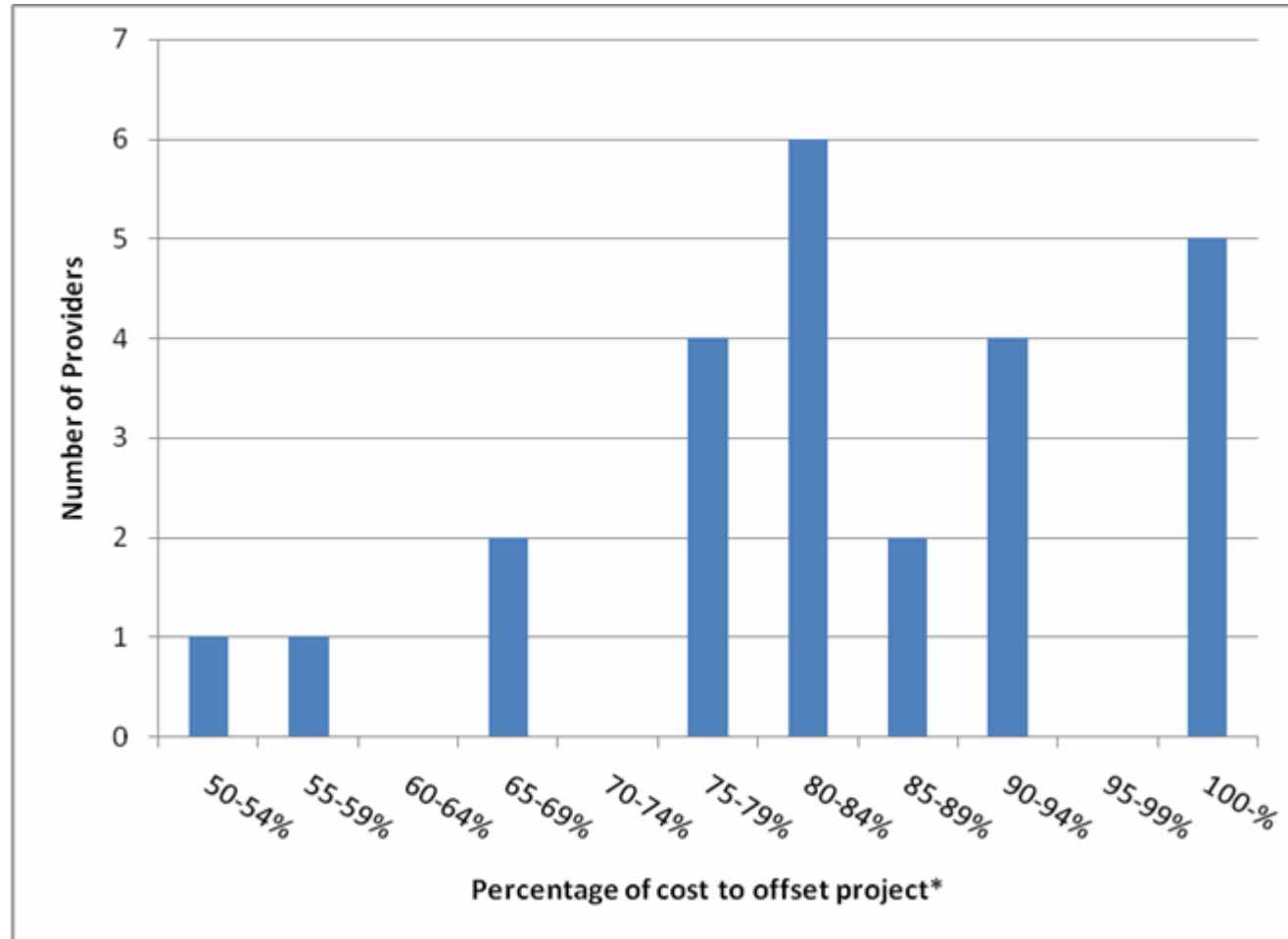
- Possible costing options:
  - Social cost
  - Abatement cost
  - Market price
- Influences on abatement costs
  - Location
  - Inherent efficiencies associated with type of project (i.e. carbon savings per £ invested)
  - Levels of assurance and verification
  - Administration and mark-up costs





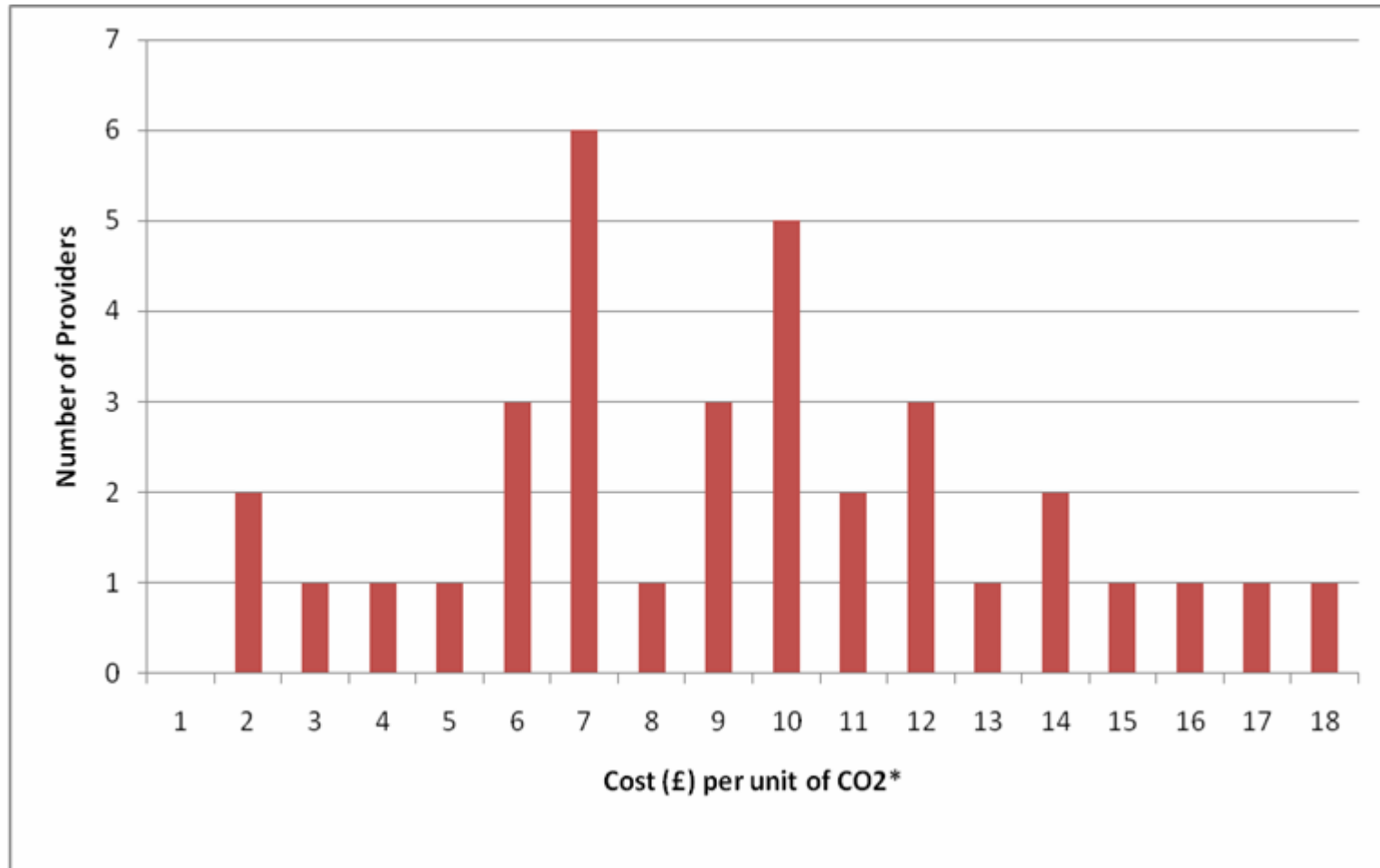


# Fund Allocation





# Unit Costs for Carbon





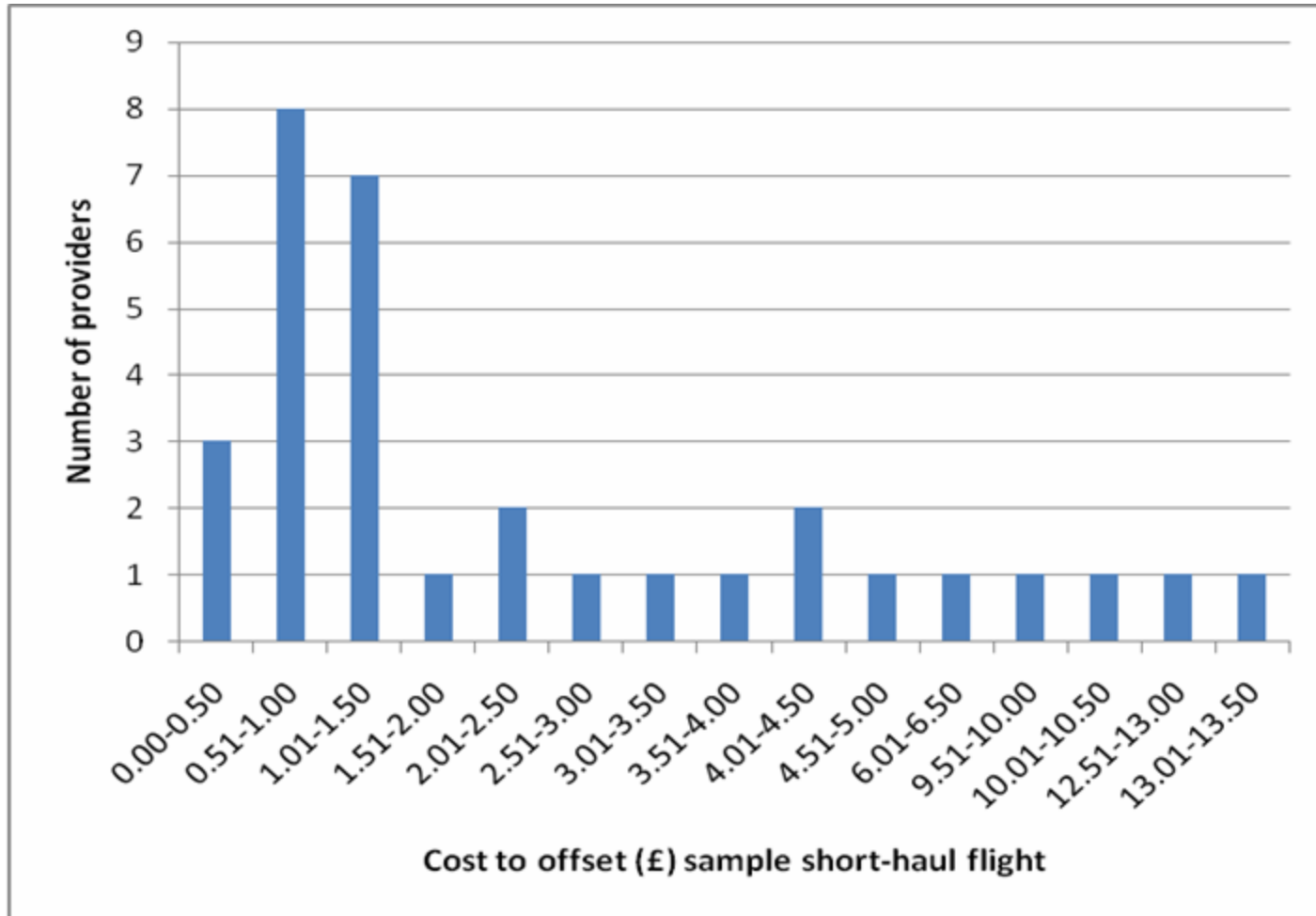
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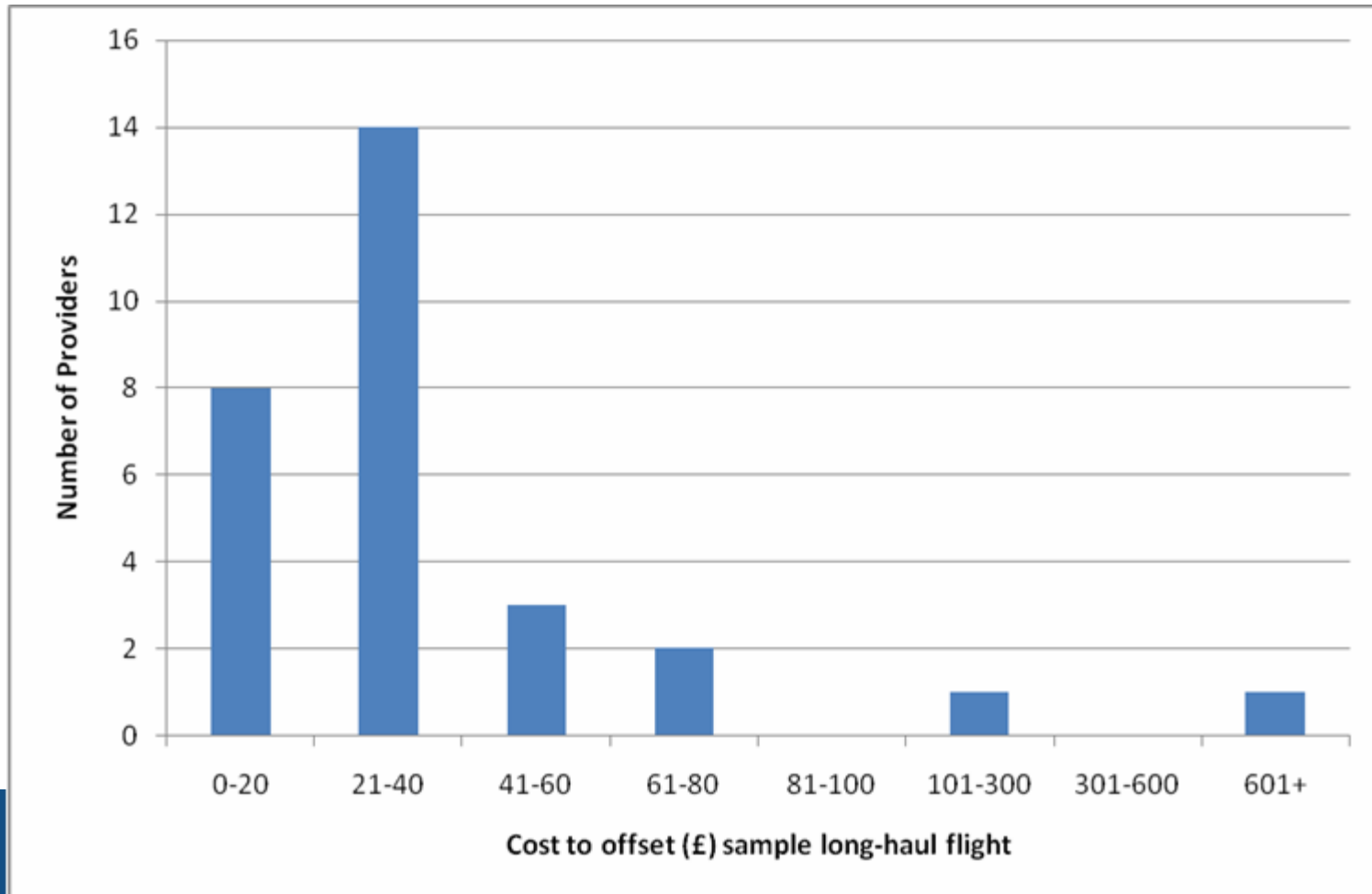


# Cost to Offset LHR to CDG





# Cost to Offset LHR to SYD







# Seating Class and Offset Cost

Cost of offsetting for sample short-haul journey:

Offset Provider <sup>1</sup>	Economy		Business Class		First Class	
	CO <sub>2</sub> Emissions	Cost	CO <sub>2</sub> Emissions	Cost	CO <sub>2</sub> Emissions	Cost
	A	0.07 tonnes	£4.29	0.10 tonnes	£4.29	n/a
B	0.20 tonnes	£9.84	0.30 tonnes	£9.84	0.50 tonnes	£9.84
C	0.14 tonnes	£0.99	0.28 tonnes	£1.98	0.42 tonnes	£2.97
D	0.10 tonnes	£1.39	0.23 tonnes	£3.13	0.23 tonnes	£3.13
E	0.11 tonnes	£1.00	0.16 tonnes	£2.00	0.26 tonnes	£4.00





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# Third Party Verification

- Full-fledged offset standards
  - CDM, VER+, CCX, Gold Standard, VCS
- Project design standards
  - CCBS
- Offset standard screens
  - VOS
- Offset accounting protocols
  - ISO 14064-2
- Other standards





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# Transparency Issues

- Provider history
- Annual reports
- Project selection
- Monitoring
- Fund allocation
- Additionality tests
- Double counting







# Provider Review- Conclusions

- Carbon calculators: inconsistent outcomes and lack of explanation - **undermine credibility**
- Standardisation efforts sending mixed messages - **undermine credibility**
- Massive variation in unit price for carbon (£2/tCO<sub>2</sub>e to £18/tCO<sub>2</sub>) - **undermines credibility**
- Cost to offset difficult to explain rationally - **undermines credibility**
- Opportunities to educate and raise awareness underexploited





# Passenger Survey

- January and February 2008
- 487 passengers at Manchester Airport surveyed
- Questionnaire developed in consultation with stakeholders from government, industry, NGOs and research institutions.
- Aimed to establish attitudes to climate change and offsetting amongst passengers to help in identifying factors that may affect the level of uptake of carbon offset services in the future





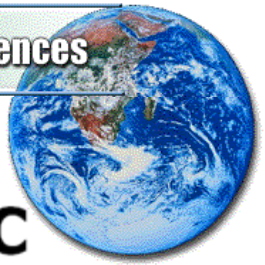
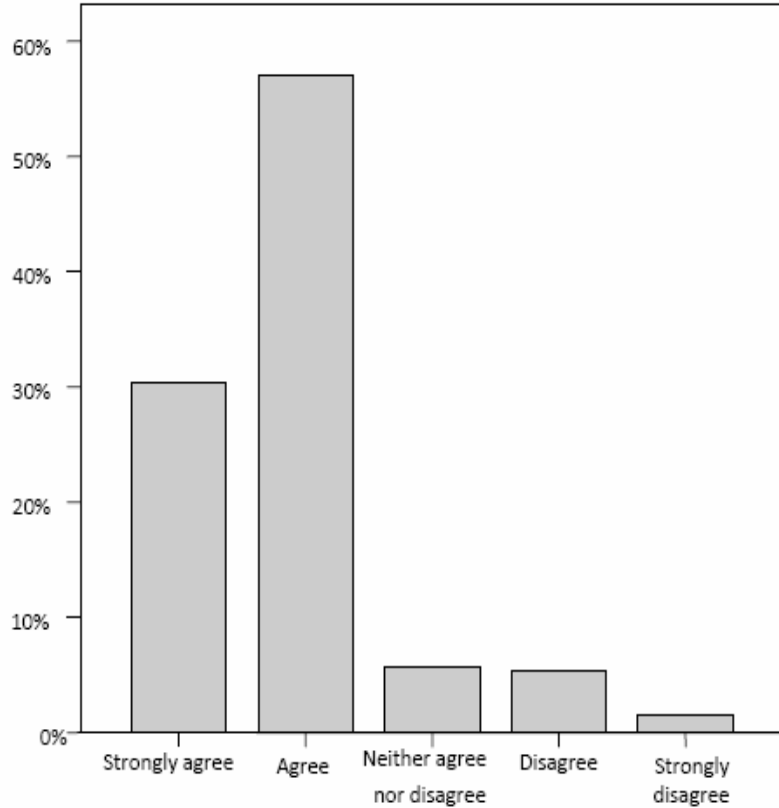
# Passenger survey – key findings

- ***Attitudes towards climate change and air transport:*** climate change a genuine threat, air transport influence on the climate – not reflected in behaviour. Government and airlines primarily responsible for aviation emissions.
- ***Awareness and use of offsetting:*** majority aware of offsetting in general, many unaware of flight-specific offset. Passengers confused about, the nature, purpose and methods of offsetting
- ***Willingness to pay:*** few willing to pay the full cost of offsetting; may more willing to fund CC mitigation.

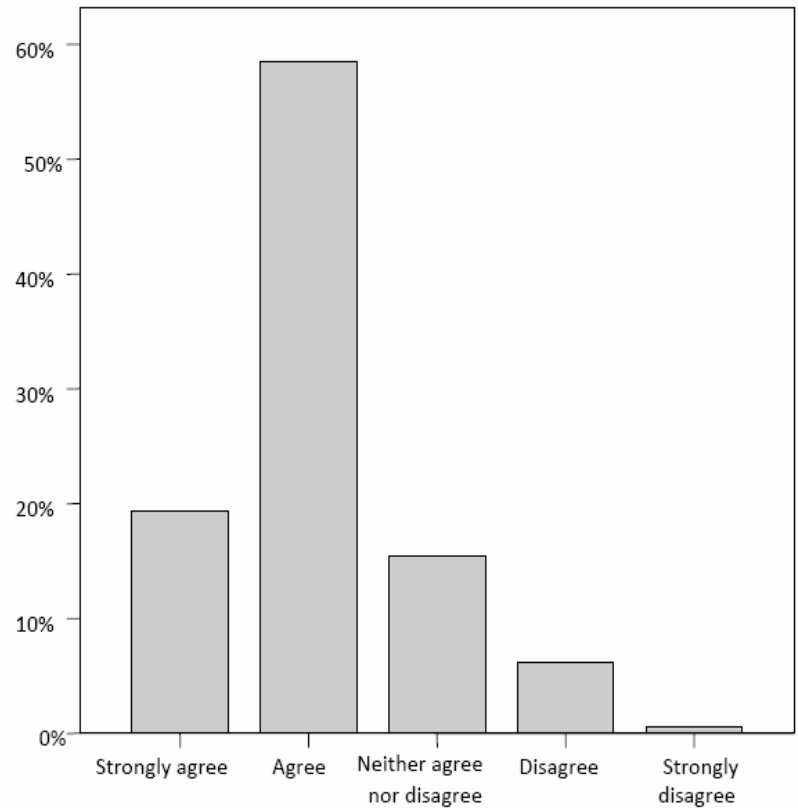




## CC genuine threat

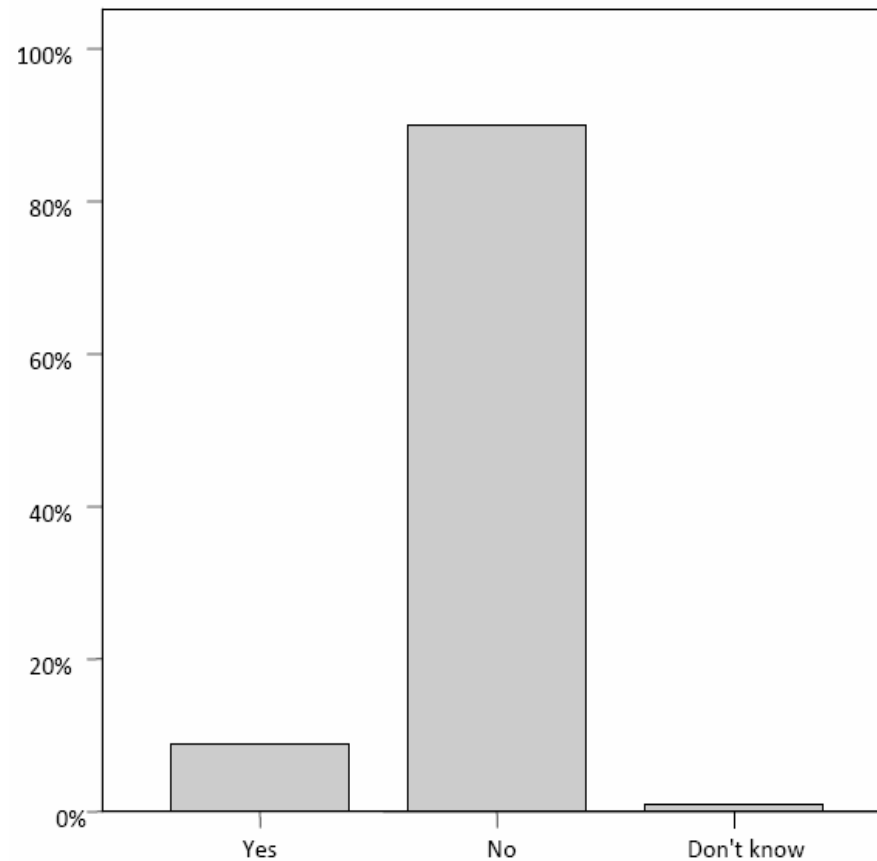


## Air travel influence on C





# View on CC influences flying choices?





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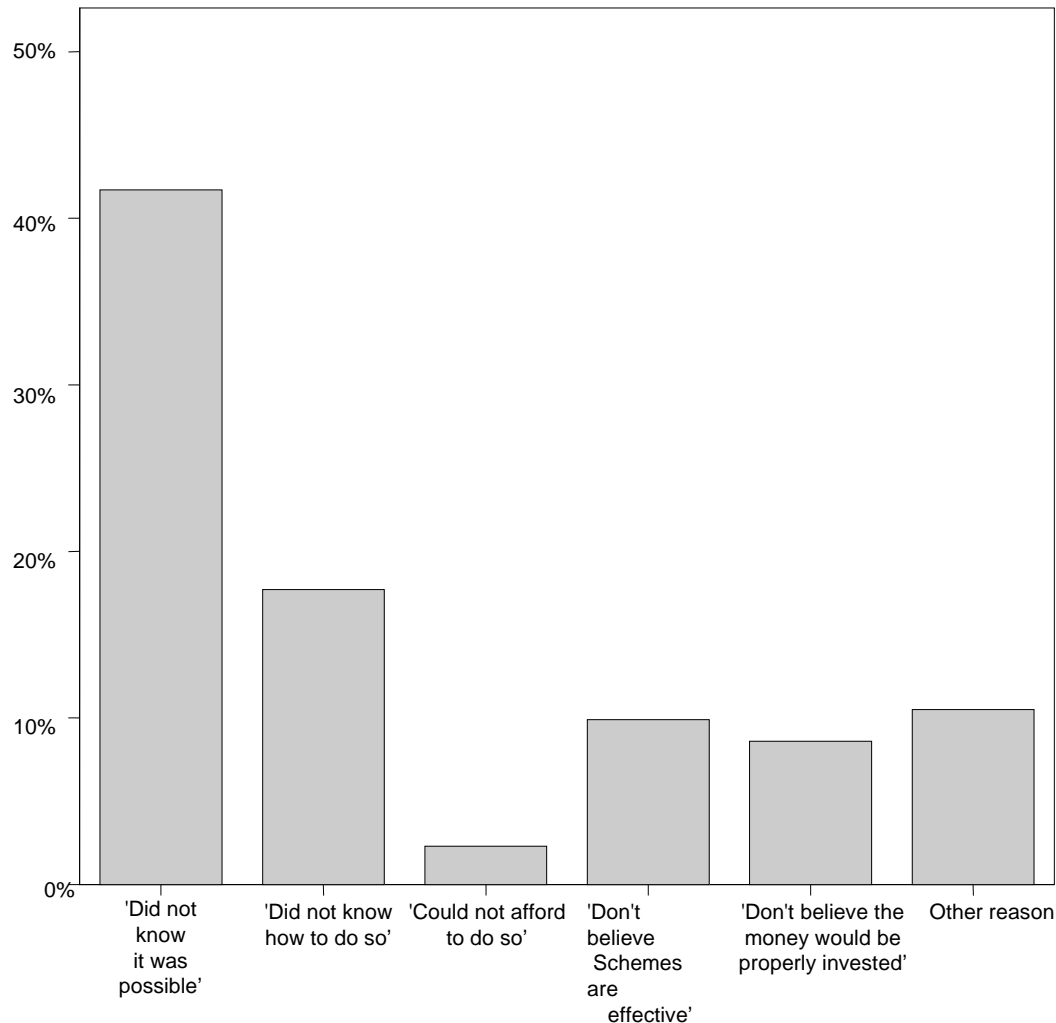
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# Reasons for not offsetting their flight





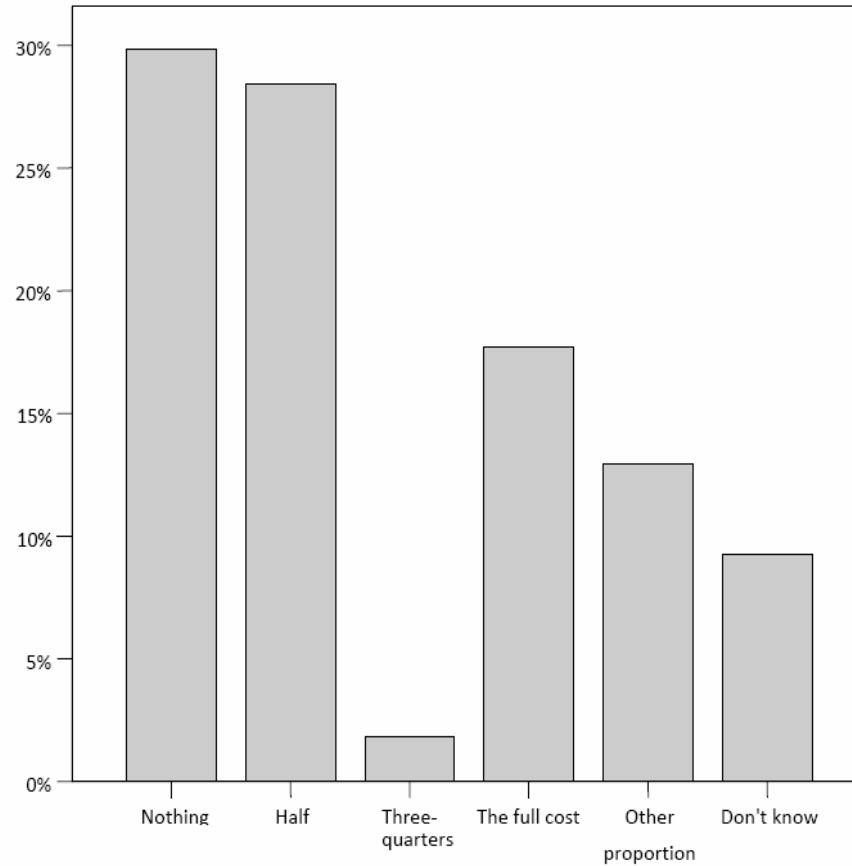
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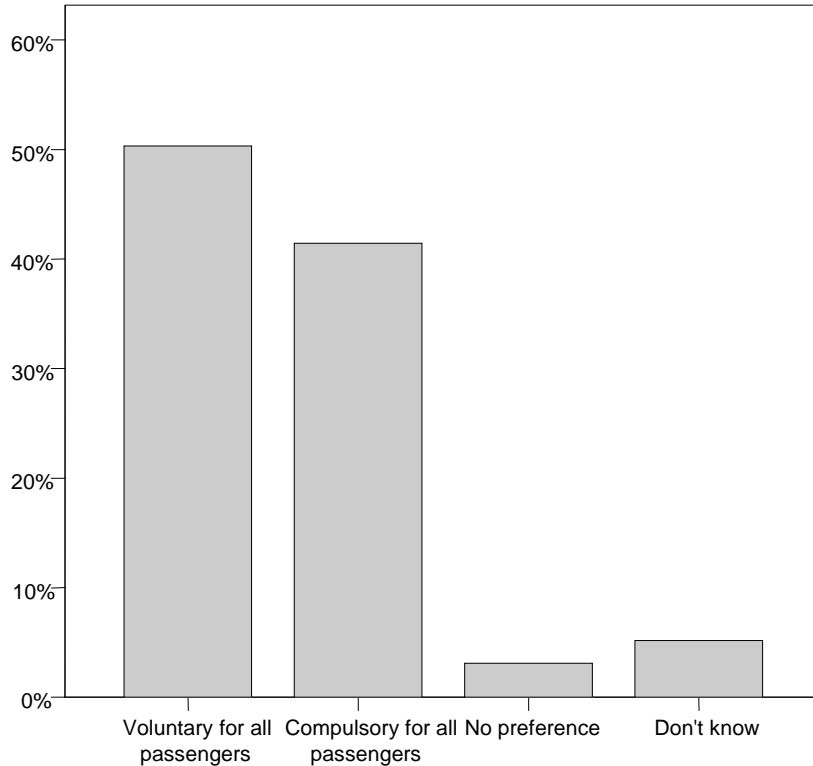


# Willingness to pay

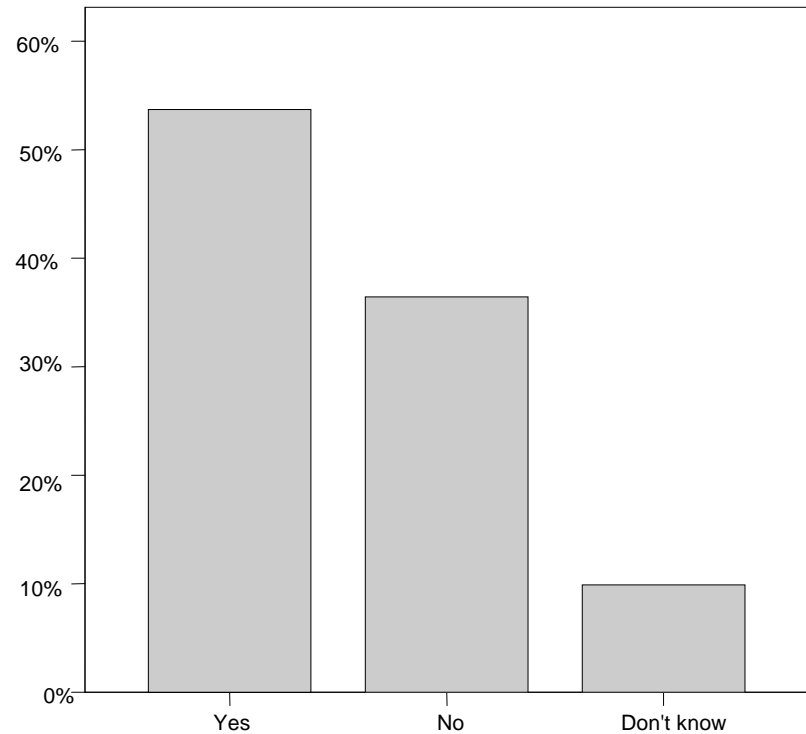




## Voluntary for passengers?

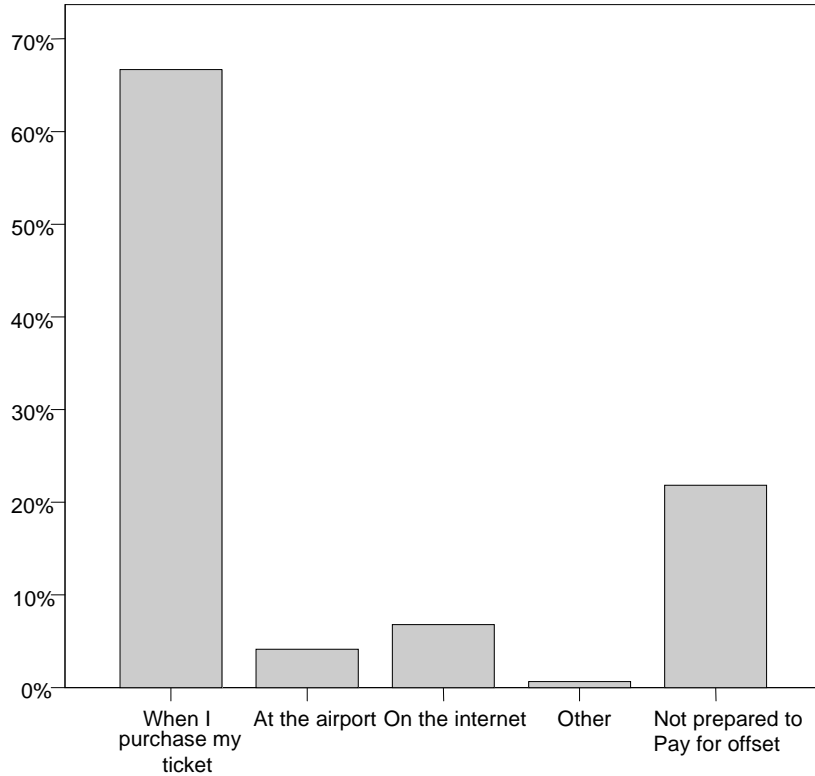


## Airlines legally required to include offset in ticket price?

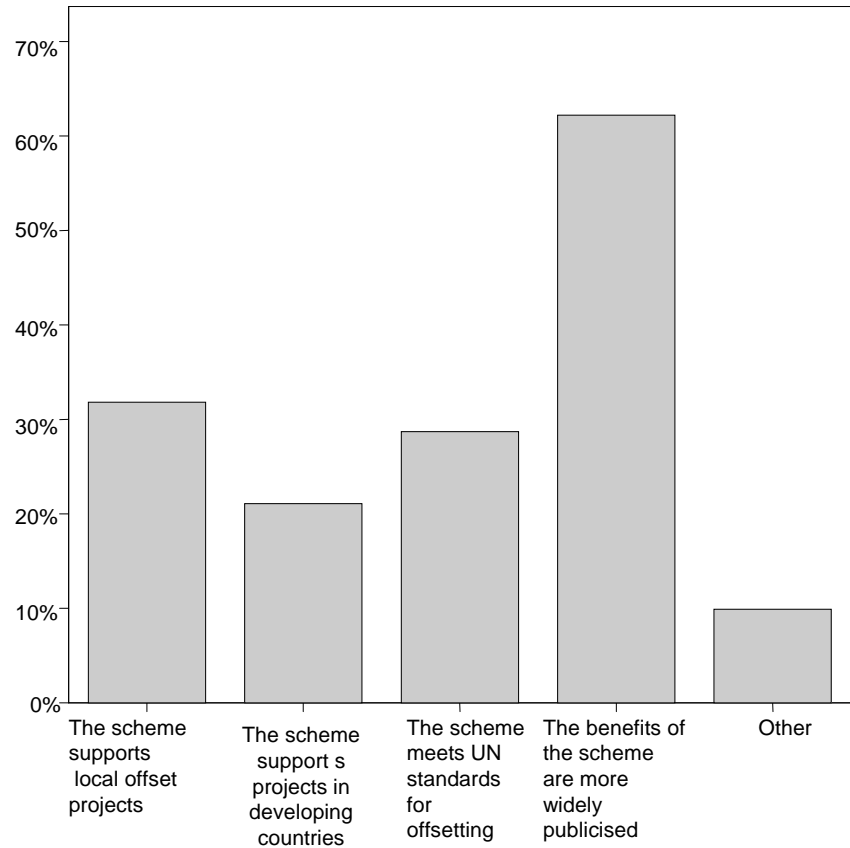




## When to pay?



## Increased willingness to pay...





# Overall Offset Study conclusions

- Current inconsistencies in the market undermine the credibility of the service
- Enhanced uptake of voluntary services requires:
  - Heightened profile of schemes and their benefits
  - Consistent means of calculating CC emissions liabilities
  - Simply product offerings – fixed amounts of compensation
- More work needed to:
  - Establish 'fit for use' method of calculating flight emissions
  - Determine customer acceptance of simplified payments

