

A Night Flight Ban on Heathrow

Overview of the Social Costs and Benefits

▶ CE Delft

- Independent, not-for profit consultancy, founded in 1978
- Transport, Energy, Economy
- 15+ years of experience with aviation
- Clients include European Commission, UK DfT, Dutch ministry of Infrastructure and Environment, airlines, trade associations, NGOs
- Author of *The Economics of Heathrow Expansion* (2008)



▶ Outline

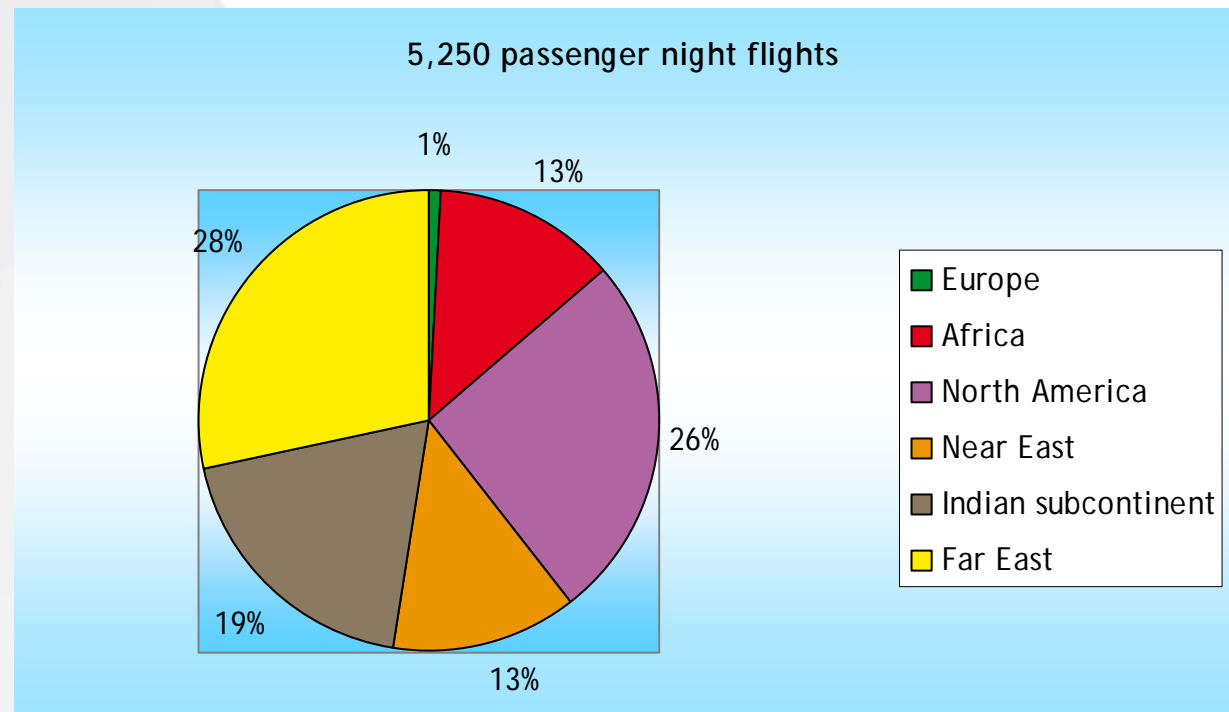
- Background to the study
- Aim and methodology of our study
- Main conclusions
- Limitations

▶ Background

- Night noise causes sleep disturbance, increase in medicine use, increase in stress and insomnia
- Around London Heathrow Airport, a large number of people are affected by aircraft noise during the night time
- Night flights are currently limited in number and noisiness of the aircraft (16 flights on average between 11:30 pm and 6:00 am)
- Regulation is up for a review
- What are the costs and benefits of a ban on night flights for the UK as a whole?

▶ Data on night flights and noise exposure

- Most night flights at Heathrow are long haul passenger flights
- An estimated 1.4 million passengers arrive at Heathrow at night annually



▶ Data on night flights and noise exposure

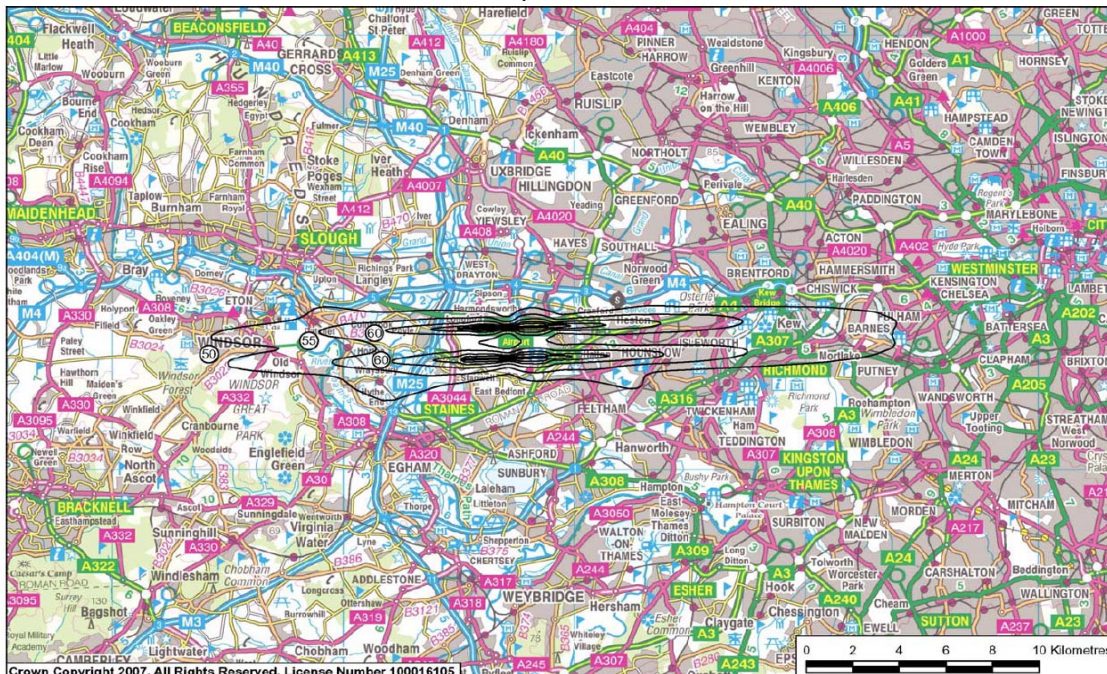
A little over 200,000 people are affected by night noise levels of 50 dB L_{night} and higher

Number of people affected at different noise levels

L_{night} noise level (dB)	Number of people affected
50-54.9	145,300
55-59.9	45,700
60-64.9	14,600
65-69.9	1,700
>70	100

FIGURE 5: HEATHROW AIRPORT
Year 2006 annual 8 hour L_{night} terrain adjusted noise contours (2300-0700 LT)
actual modal split 72% west / 28% east

Source: UK CAA, 2007



▶ Aim and methodology

Aim: analyse social, environmental and economic effects of a ban on night flights at Heathrow Airport

Social Cost Benefit Analysis takes into account:

- Direct costs and benefits: airport and airline value added
- Indirect costs and benefits: tourism receipts and expenditures
- External costs and benefits: noise, emissions, frequency and travel time

UK perspective:

- Taxes, payments of UK citizens to UK airports and airlines, are transfers not costs or benefits

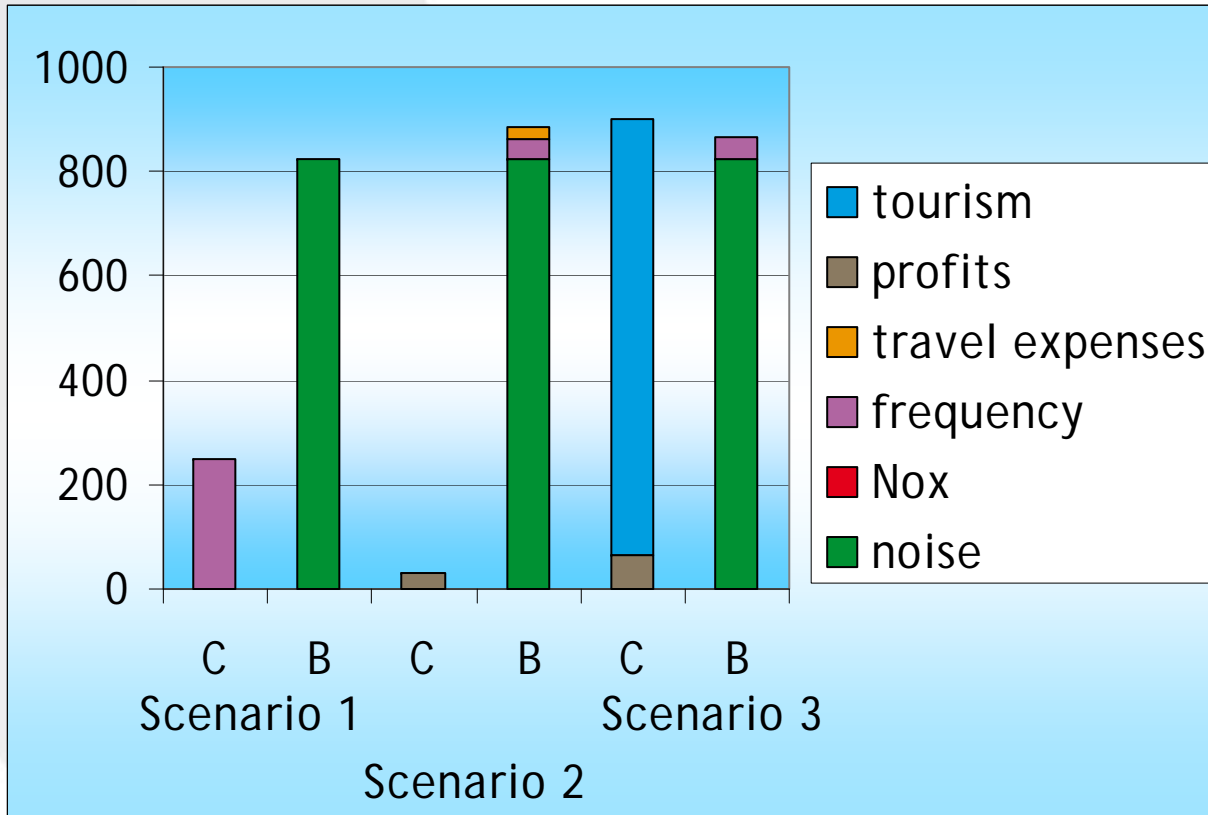
Conservative approach:

- In general, costs are overestimated and benefits are underestimated

▶ Aim and methodology

- Costs and benefits depend on reaction of passengers and airlines to a night flight ban
- Different for passengers destined for UK or transfer passengers
- Different for business or leisure passengers
- Three scenarios:
 1. All flights are rescheduled to another time and all passengers continue to use Heathrow
 2. All flights are rescheduled, but only direct passengers continue to use Heathrow; transfer passengers use non UK airports
 3. All flights are cancelled and passengers no longer use Heathrow
- Scenarios can be regarded as extremes; reaction to a ban will likely lay between these scenarios

▶ Main findings



▶ Main conclusions

- The impacts of a night flight ban on UK welfare are likely to range from an increase of £ 860 million to a decrease of £ 35 million over a period of ten years (2013-2023)
- The main benefits are reduced sleep disturbance and its impacts on health, well-being and productivity
- The main costs are travel time and reduced airline profits

▶ Limitations

- The social cost benefit analysis presented here relies on general data for the valuation of travel time, night noise, et cetera
- We didn't have access to detailed passenger data so we had to assume that the number of passengers, the share of business and leisure passengers, the share of foreign and UK passengers, on night flights was comparable to all flights
- There is no generally accepted way to monetize night noise. We used empirical data from Miedema (2007) and valuation methods recommended by the World Health Organisation

Thank you!

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▶ Detailed results

- All flights rescheduled
- All passengers continue to use Heathrow

Cost and benefits of ban on night flights under alternative R1, in million GBP₂₀₁₀, NPV in 2010

Costs	Million GBP	Benefits	Million GBP
Freq and travel time	250.1	Noise reduction	821.7
Profits	0	NO _x emission reduction	0
APD and freight profits	PM	Saving travel expenses	0
Non-air revenues	PM		
Indirect effects- employment	PM		
Indirect effects-tourism	0		
Total	250.1	Total	821.7
		Balance	571.6
		Benefit/Cost ratio	329%

▶ Detailed results

- All flights rescheduled
- All OD passengers continue to use Heathrow, transfer passengers use non-UK airports

Cost and benefits of ban on night flights under alternative R2, in million GBP₂₀₁₀, NPV in 2010

Costs	Million GBP	Benefits	Million GBP
Profits	28.5	Noise	821.7
APD and freight profits	PM	NO _x	0
Non-air revenues	PM	Frequency and travel time	39.9
Indirect effects-employment	PM	Saving travel expenses	22.9
Indirect effects-tourism	0		
Total	28.5	Total	884.5
		Balance	856.0
		Benefit/Cost ratio	3109%

▶ Detailed results

- All flights cancelled
- All passengers will stop using Heathrow or another UK airport

Cost and benefits of ban on night flights under alternative R3, in GBP₂₀₁₀, NPV in 2010

Costs	Million GBP	Benefits	Million GBP
Freq and travel time	PM	Noise	821.7
Profits	66.8	NO _x	2.4
APD and freight profits	PM	Saving travel expenses	39.2
Non-air revenues	PM		
Indirect effects-employment	PM		
Indirect effects-tourism	831.7		
Total	898.4	Total	863.3
		Balance	-35.2
		Benefit/Cost ratio	96%

▶ Valuation of night noise

Noise effects

- Health: hypertension, myocardial infarction, hearing damage, etc.
- Annoyance: pain, discomfort, sleep disturbance, etc.

Valuation

- Direct valuation of health impacts
- Hedonic prices (e.g. relation between house prices and noise)
- Stated preference (surveys on willingness to accept noise)

This study uses direct valuation because this is the only method for which specific *night noise* values can be calculated

▶ Valuation of night noise

- This study uses the impact on sleep disturbance as the basis for the valuation
- # of people in L_{night} area - # of people sleep disturbed - number of DALY - DALY valuation
- The number of highly annoyed people as a relation of noise exposure is determined following a meta-analysis by Miedema and Vos, 2007
- The relationship between sleep disturbance follows WHO guidance
- DALY valuation according to NEEDS

▶ Employment

- As a rule of thumb, there are 950 airport jobs per 1 million passengers
- So 1.4 million passengers would support 1,330 jobs
- A cancellation of all night flights would *not* result in 1,330 fewer jobs, because:
 - In a well functioning labour market, employees would find other jobs
 - Money that UK citizens would not spend on air travel would likely be spent in other parts of the economy, supporting jobs there