

Responsible Aviation and Peak Oil

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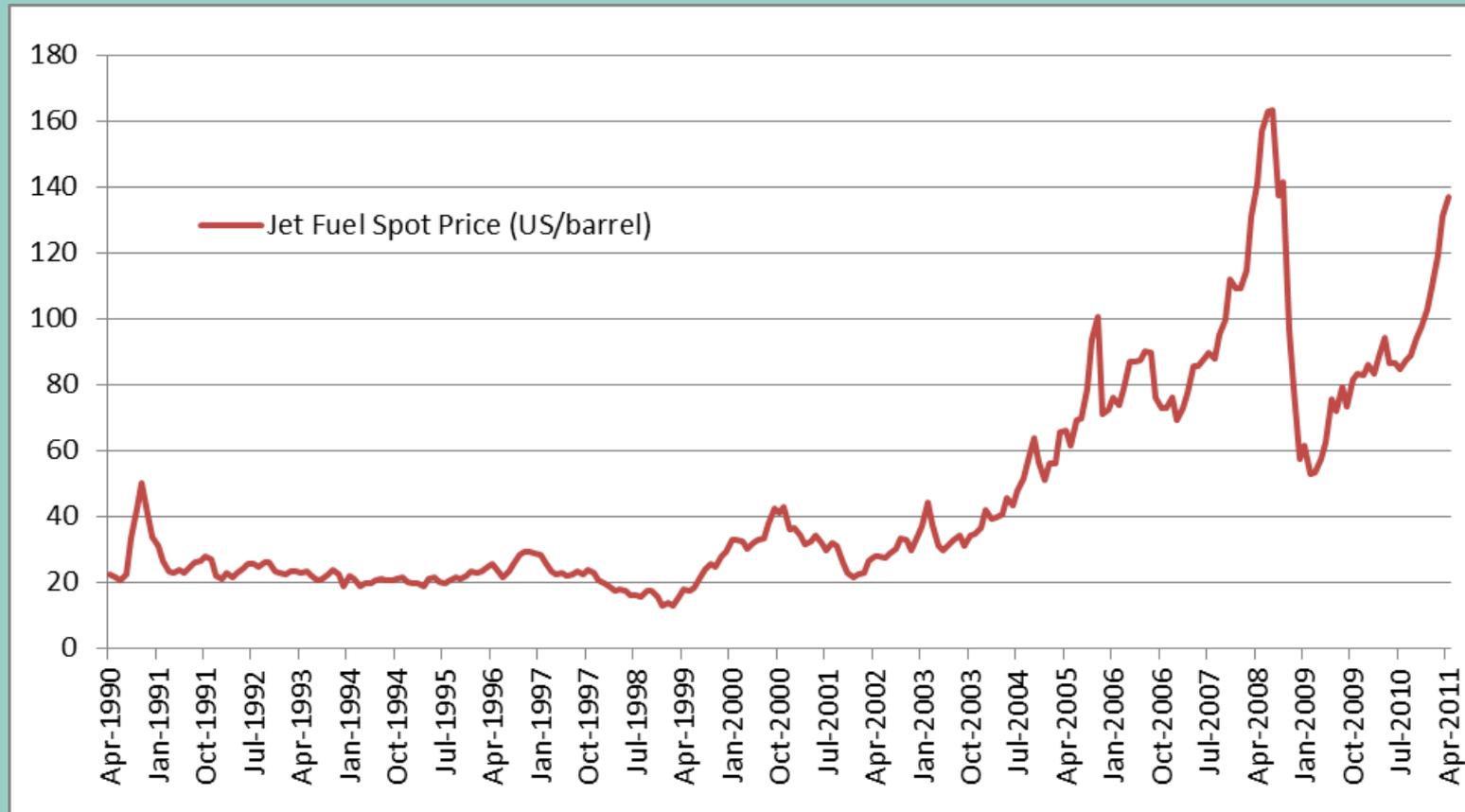
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What means Responsible Aviation?



- Is RA an oxymoron?
- Who is responsible to whom?
- The white elephant in the room...

The Price of Fuel



U.S. Gulf Coast Kerosene-Type Jet Fuel Spot Price, based on data by the Energy Information Administration



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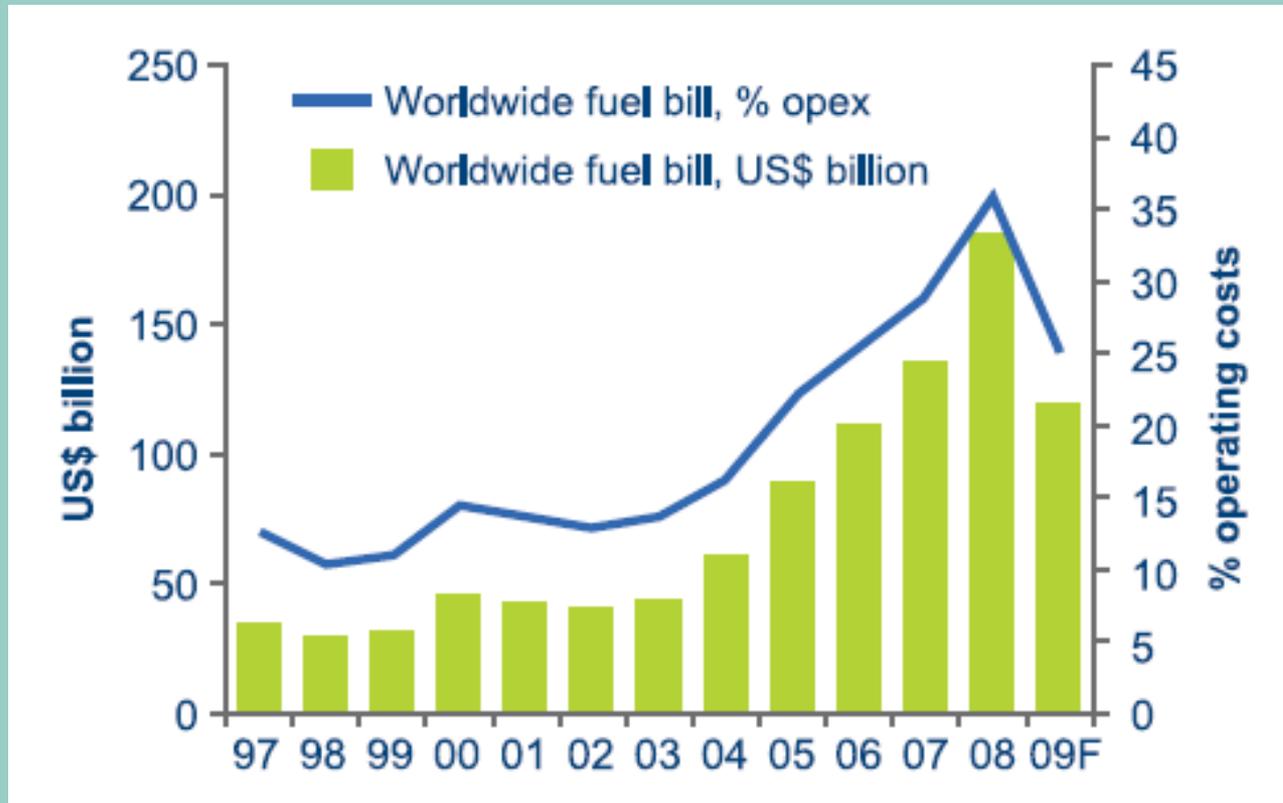
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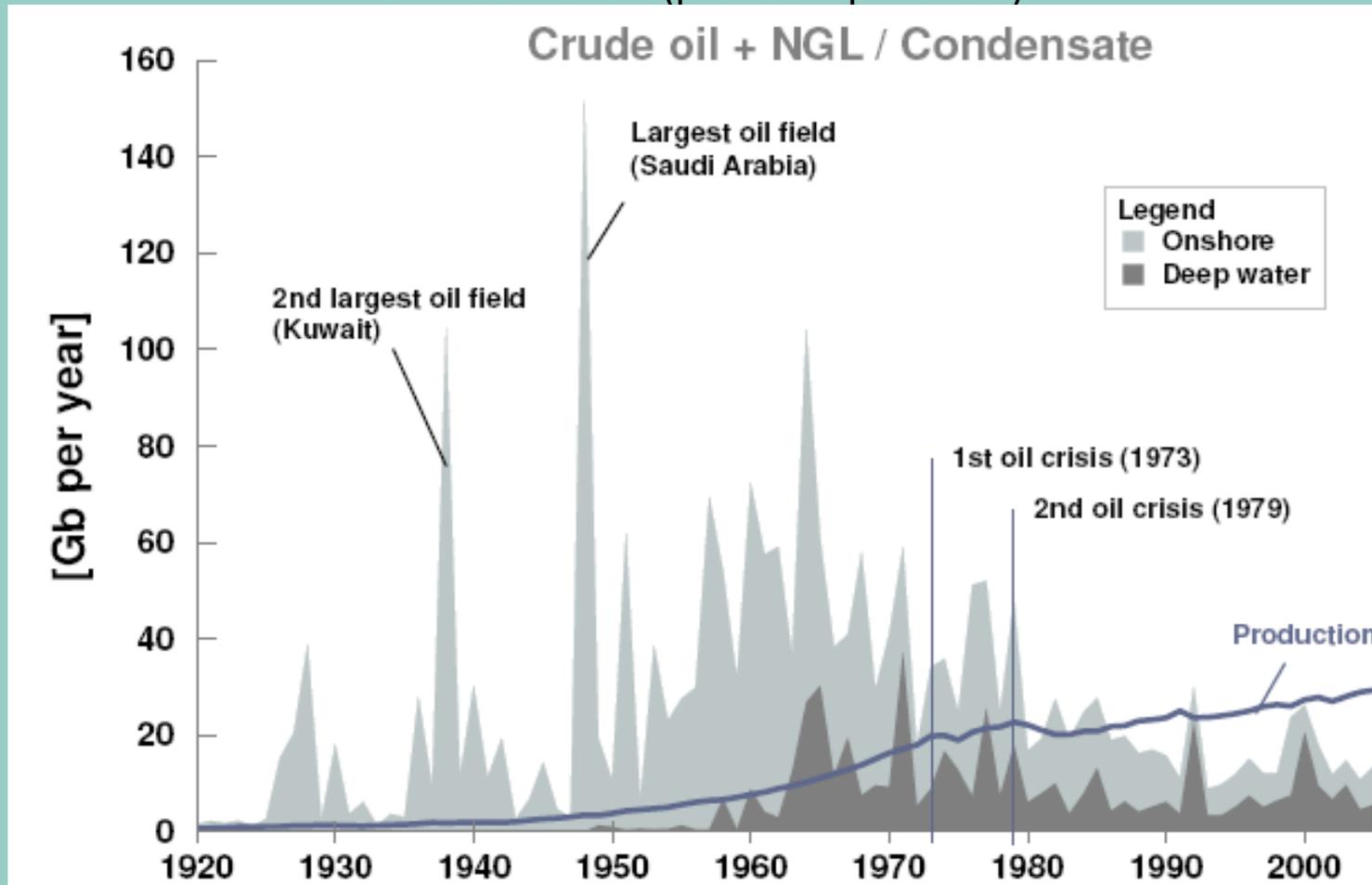
Proportion of operating costs



Fuel is the airlines' highest single cost item, some 30 to 40% of total costs in 2008. IATA (2009). Technology Roadmap.

How much Oil is there?

Oil Discoveries (proved + probable)



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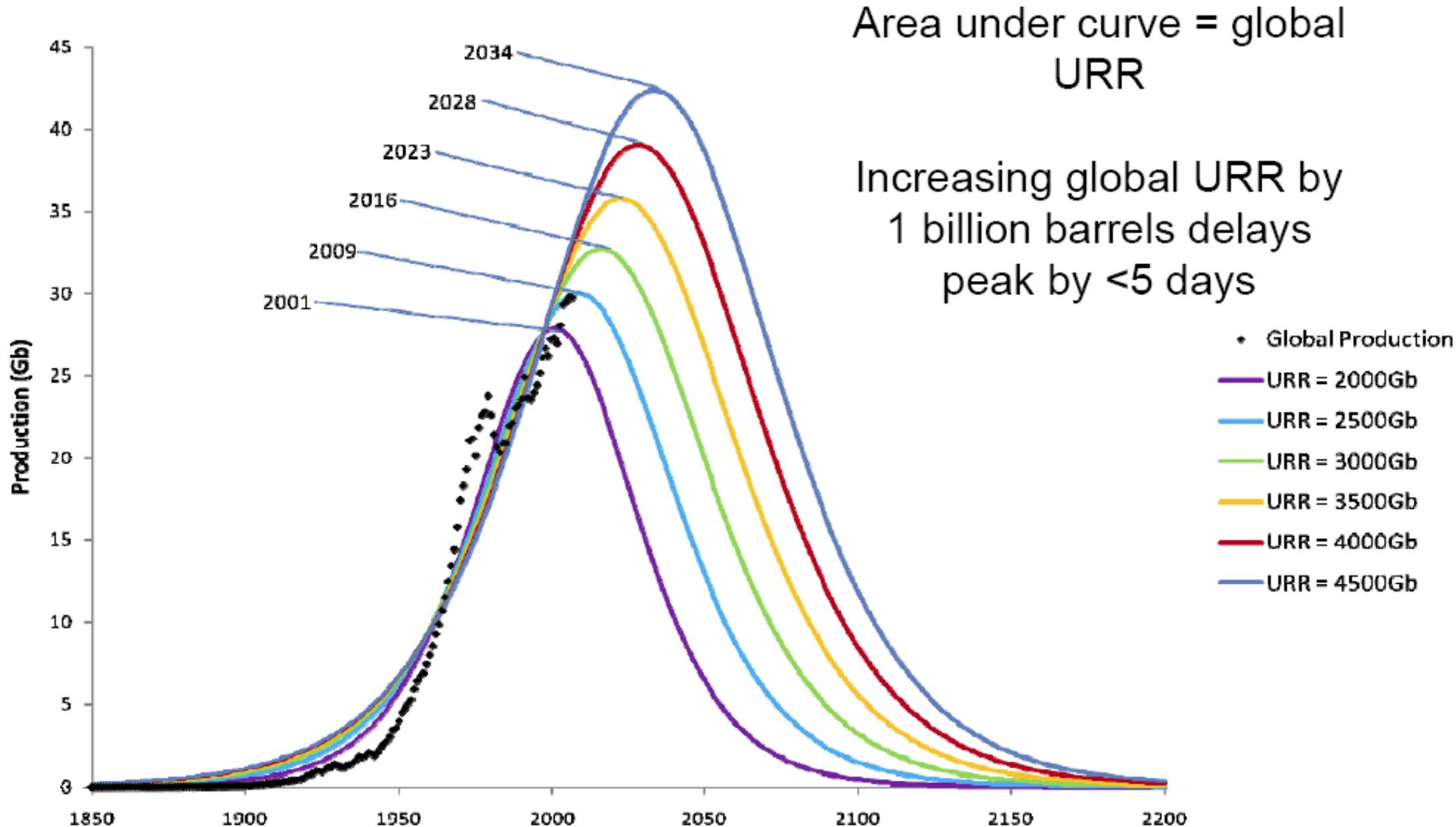


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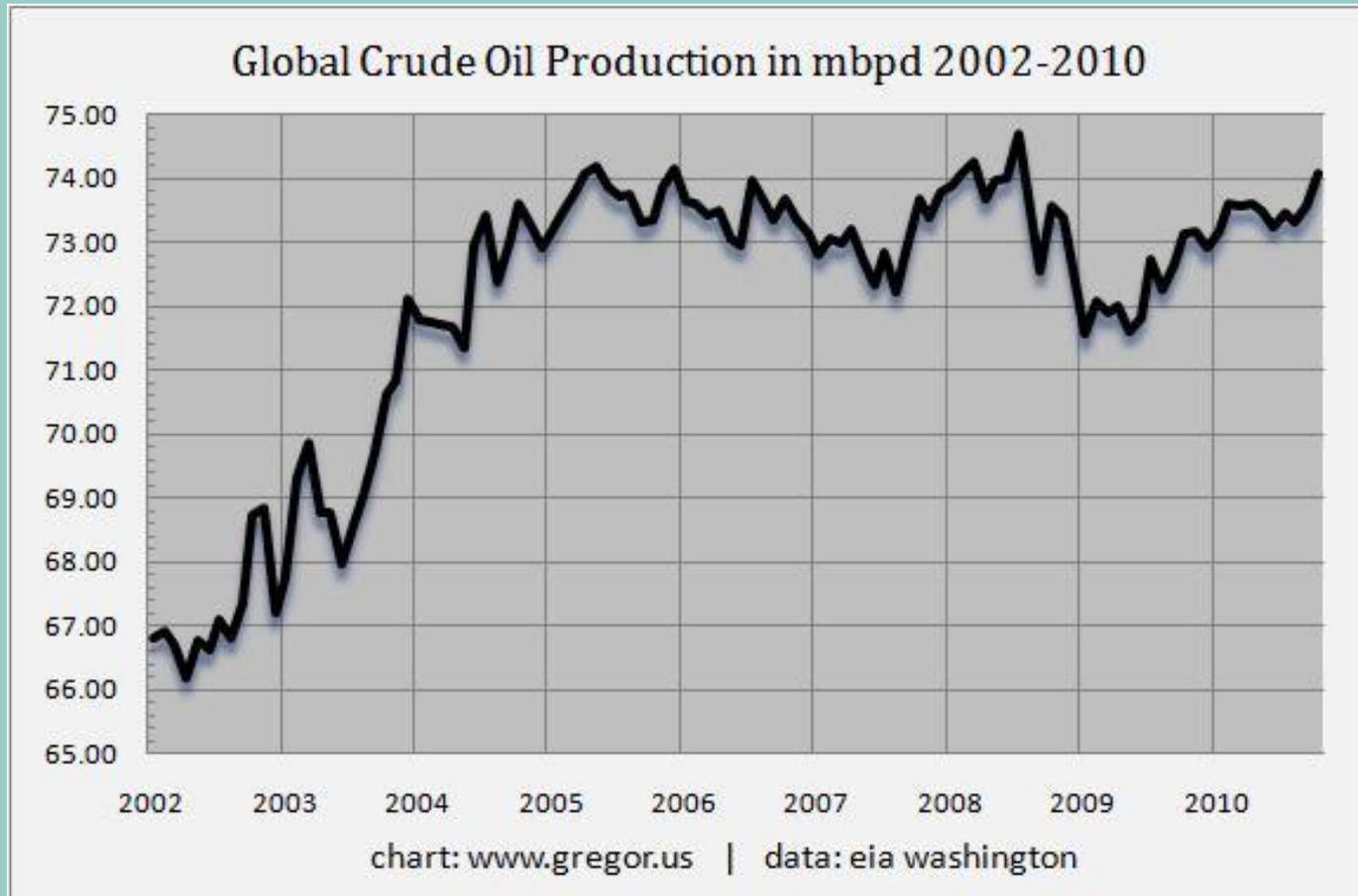
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Peaking of global production?

Source: UK Energy Research Centre, 2009



How much are we producing



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Comparison with “cost of carbon”

- About 0.42 tonnes CO₂/barrel
- Say \$20 per tonne of carbon on market => US\$ 8.4 per barrel when burned
- Increase between Nov 2010 and April 2011: \$39.6 per barrel
- Equivalent to a carbon price of \$94 per tonne.
- \$100 per tonne of CO₂ is considered a high price.



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Tourists' price sensitivity

- Schiff & Becken (2010): airfares for New Zealand
 - Mayor & Tol (2007): UK aviation tax
 - Pentelow & Scott (2011): aviation policy, Caribbean
 - Goessling et al. (2008): developing countries
- ⇒ **Only very high costs of carbon would result in significant impacts on tourist arrivals.**
- ⇒ **However, not specifically tested for very high fuel prices.**



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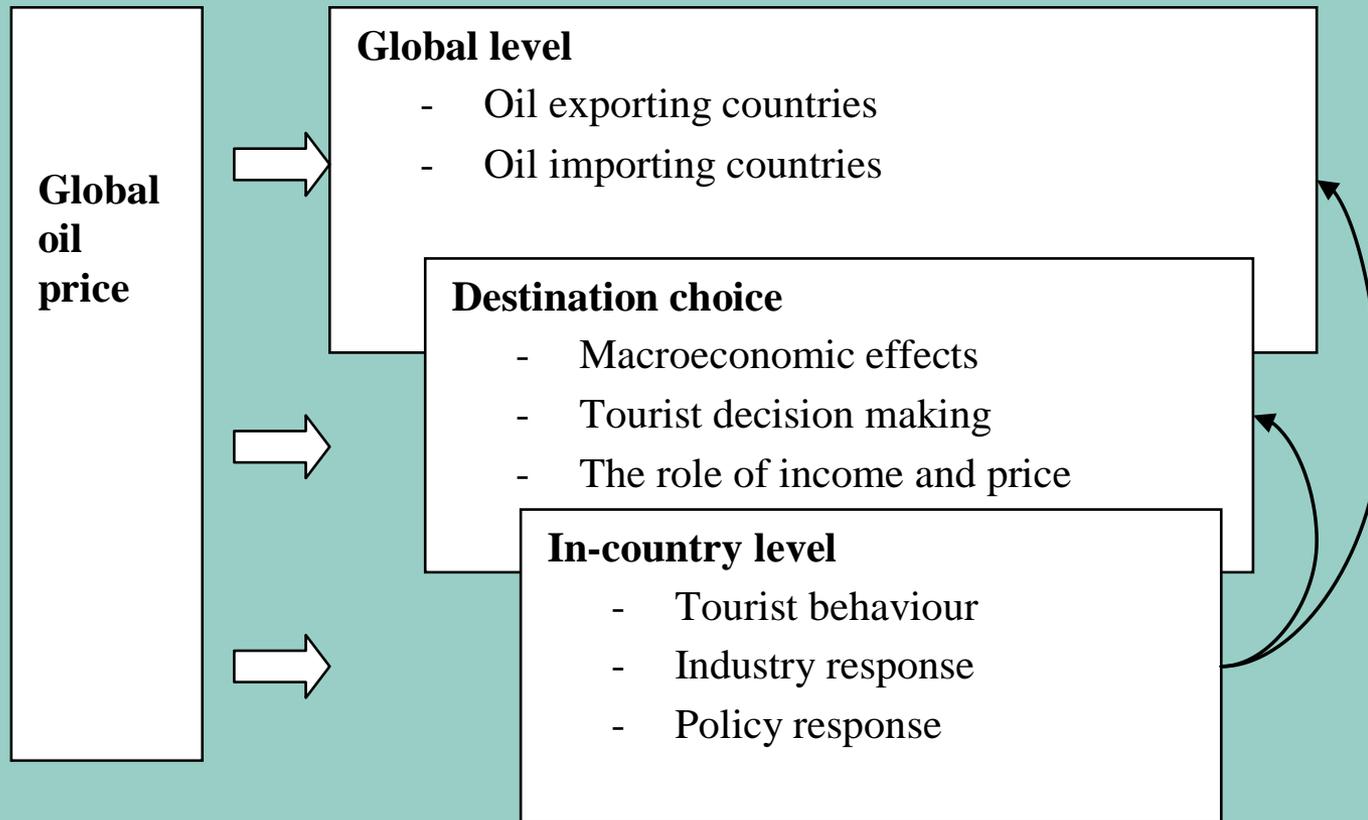
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Macro-economic environment



NZCGE Model – whole-of-economy

- Effects on overall economy rel. small
- Tourism effects substantial
- Differences in market segments (e.g. UK decreases substantially)

| | <i>100% increase in oil price</i> |
|--|-----------------------------------|
| Real GDP | -2.3% |
| Labour force | -1.3% |
| Real wage | -6.7% |
| Total imports (value) | 1.9% |
| Total exports (value) | 0.1% |
| Tourism exports (value) | -10.3% |
| Overall tourism consumption (quantity) | -7.1% |
| Accommodation (quantity) | -5.7% |
| Rental vehicles (quantity) | -14.7% |
| Domestic air transport (quantity) | -3.3% |



Biofuel

| Airline | Aircraft | Partners | Date | Biofuel |
|----------------------|-----------|---------------------------------|-----------|--|
| Virgin Atlantic | B7474-400 | Boeing, GE Aviation | 23 Feb 08 | Coconut and Babassu (20% blend) |
| Air New Zealand | B7474-400 | Boeing, Rolls Royce | 30 Dec 08 | Jatropha (50% blend) |
| Continental Airlines | B7474-800 | GE aviation, CFM, Honeywell UOP | 7 Jan 09 | Algae with Jatropha (50% blend) |
| JAL | B7474-300 | Pratt & Whitney, Honeywell UOP | 30 Jan09 | Camelina, Jatropha and Algae blend (50%) |

Peeters (2010) estimated that if the biofuel came from Jatropha, an area the size of Germany, France, the Netherlands and Belgium combined would be required to fuel current air transport (i.e. all jet fuel in 2005).



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Conclusions

- Responsible Tourism is a multi-layered concept;
- Climate Change is an important issue and is putting pressure on the aviation sector;
- Energy security is an overlooked issue;
- Fuel prices are likely to increase in the future – higher and faster than carbon taxes;
- This could influence business decisions.



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