

# Food Miles and Sustainability



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# Overview

- Background to food miles
- Defra Study
- Trends in key indicators over time
- Wider trade-offs and sustainability issues
- Perspectives
- Conclusions



# Background – Food Miles

- Food miles = distance from farm to plate
- Concerns over increasing food miles
- Environmental, social & economic impact
- Study commissioned by Defra (2004 - 2006) by
  - <http://statistics.defra.gov.uk/esg/reports/foodmiles/default.asp>



# Why the Increase in Food Miles?

- Globalisation of food industry - wider sourcing, imports & exports
- Concentration of the food supply base - fewer, larger suppliers (yr)
- Major changes in delivery patterns
  - Food through supermarket regional distribution centres, more use larger HGVs
- Centralisation and concentration of sales in supermarkets
  - Switch from frequent food shopping (on foot), to weekly shopping by car
- Processing and packaging

# Key Findings – Significance of Food Miles

Environmental, social & economic burdens from food transport are significant

- Food transport accounted for estimated 30 billion vehicle km in 2002
- Food transport equivalent to 25% of all HGV vehicle kilometres in the UK
- Food transport produced 18 million tonnes of CO<sub>2</sub> in 2004 (equ. to 2% UK)
- Significant emissions of air pollutants
- Important because there is a trend toward more food miles

# And significant in economic terms

- Direct environmental, social and economic costs of food transport
- (not fully included in prices we pay for food)
  - Costs of congestion
  - Accidents
  - Infrastructure
  - Emissions (CO<sub>2</sub>, Air Pollutants)
  - Noise



**Estimated at £9 billion / year !**

HGV dominates infrastructure, noise and pollution, car high congestion and accidents

# Study Findings

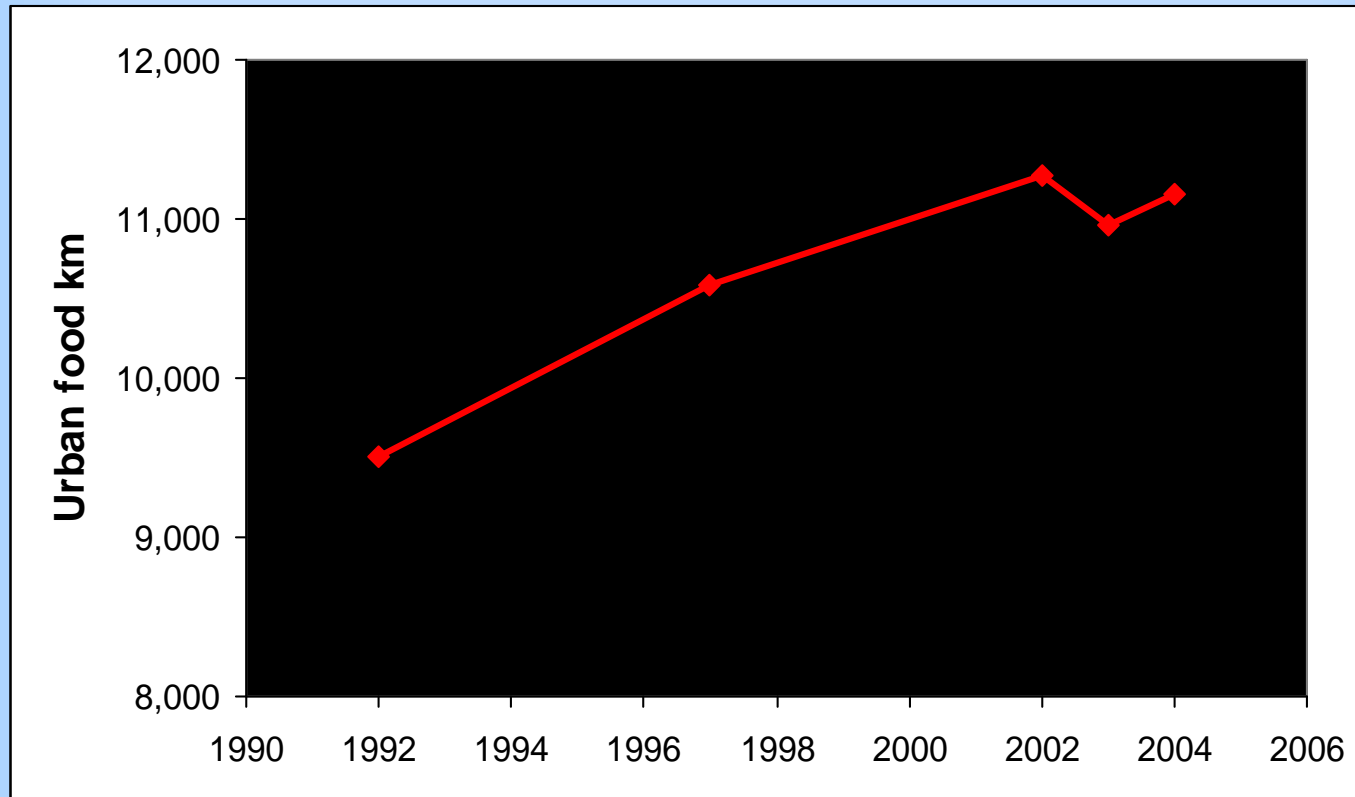
- Recommended indicator needed, but 'food miles' alone too simplistic.....
- Impacts are caused by vehicles (food vehicle km rather than food miles)
- Impact per tonne of food transported varies with load factor
  - Same impact from a vehicle carrying 5 or 10 tonnes of food (per km)
- Different vehicles and different modes have varying impacts
  - 1 km by HGV different impact to 1 km driven by car, & different balance of impacts
  - Different steps in food supply chain will be associated with different types of impacts
  - Air disproportionately high CO<sub>2</sub> per tonne transported – 1% tonne km but 11% of CO<sub>2</sub>

# Study Recommendations

- Recommend suite of indicators
  - **Urban food vehicle kilometres** – captures car use and urban congestion
  - **HGV food vehicle kilometres** – captures lorry transport, Infra., environment
  - **Air food vehicle kilometres**
    - Growing extremely quickly and disproportionately high CO<sub>2</sub>
  - **CO<sub>2</sub> emissions** – captures many emissions missing in current inventories

Government accepted recommendations, experimental indicator set

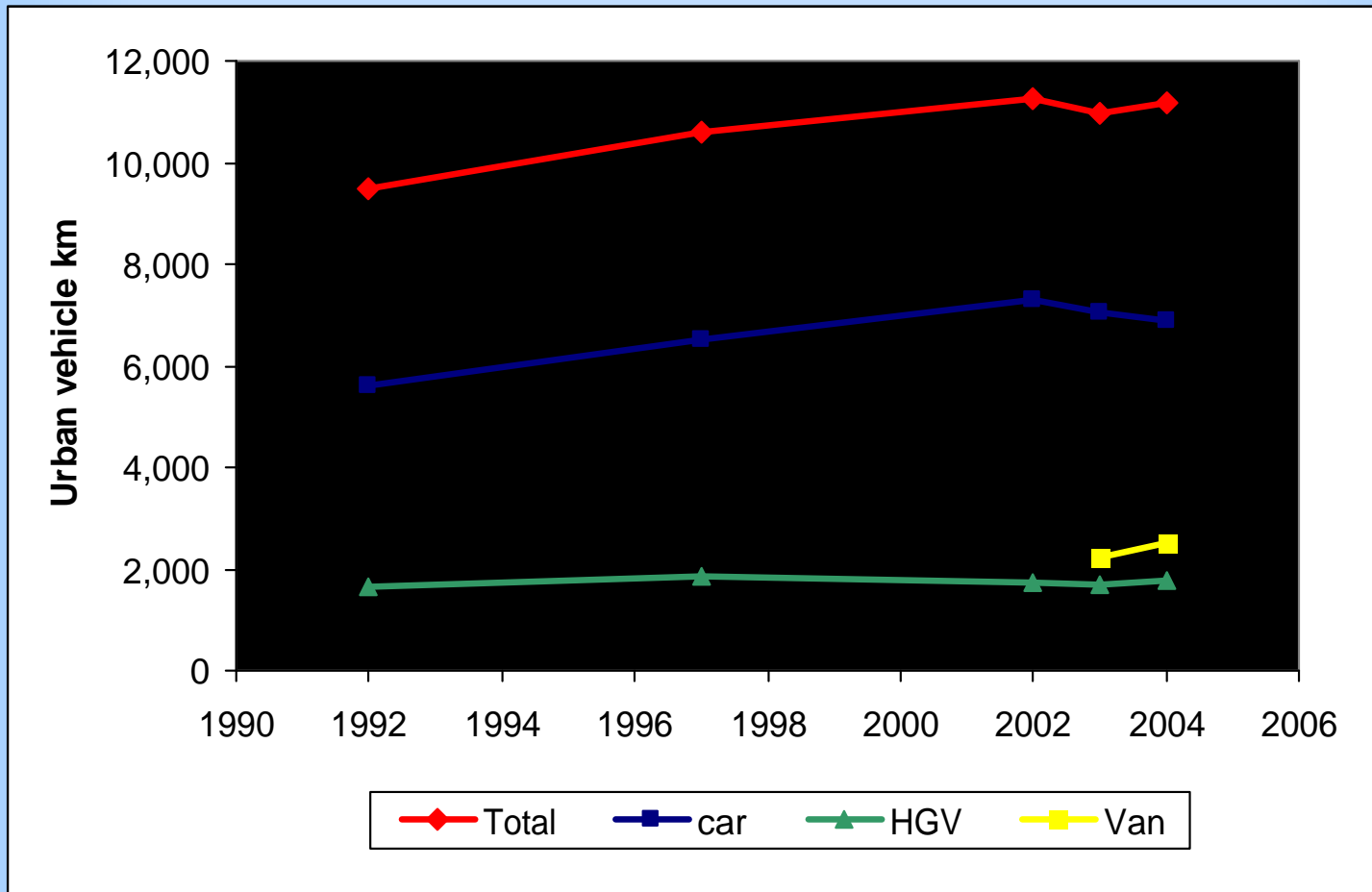
# 1. Urban Food Vehicle km (Mill)



## Urban food vehicle kilometres – capture urban congestion

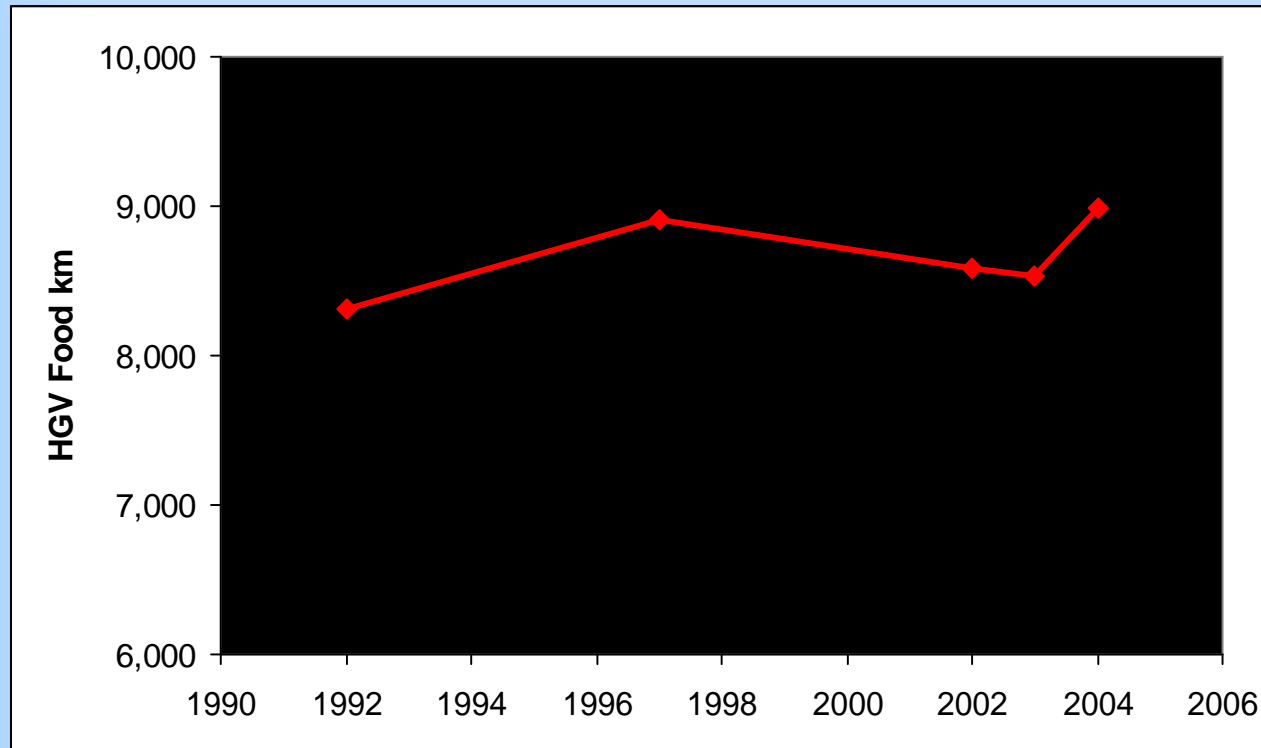
- Large increase from 1992 to 2002 (+20% overall, 30% by car)
- Stable 2002 to 2004 (+/- 1~2%)

# 1. Dis-aggregated



Since, 2002, slight decrease in car km, slight increase in freight km

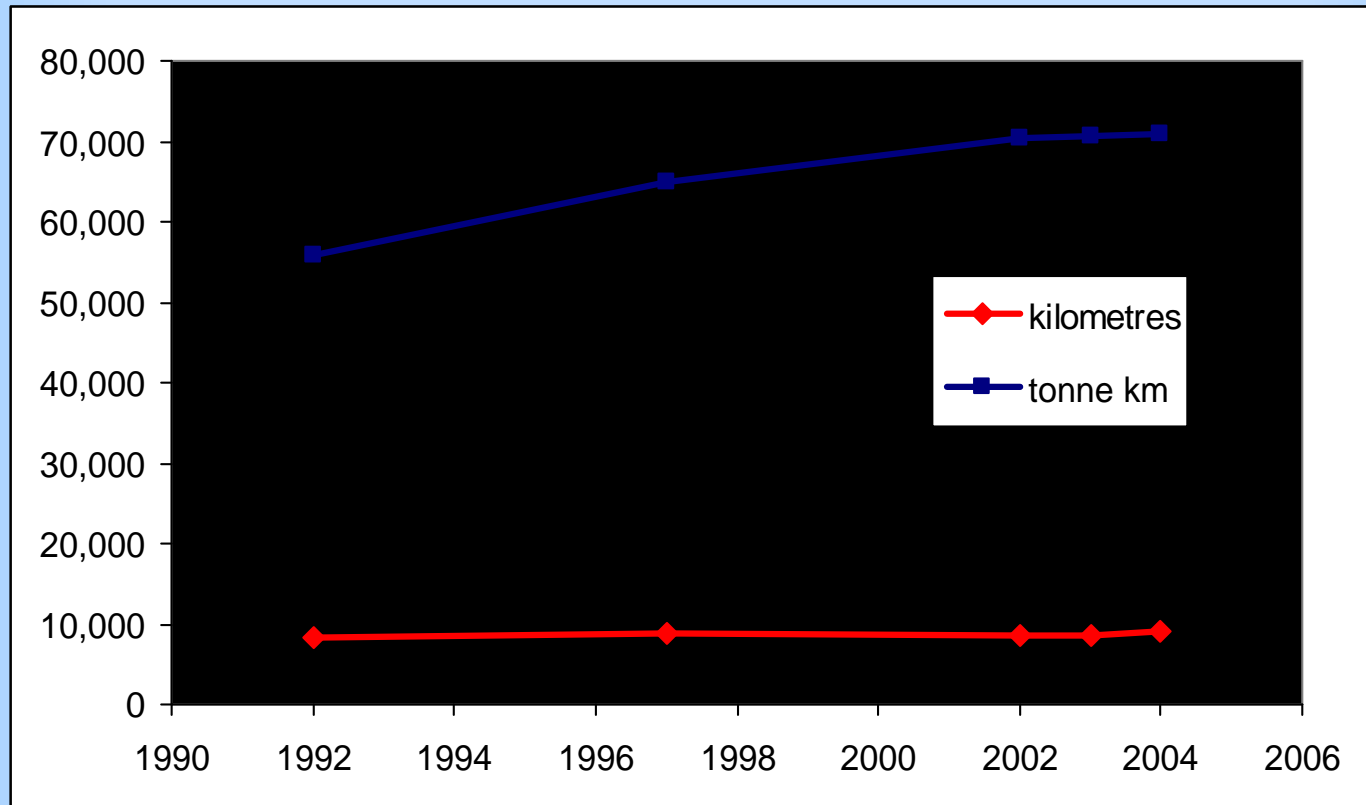
## 2. HGV Food Vehicle km (Mill)



### **HGV food vehicle kilometres – capture infrastructure, environment**

- Relatively stable 1992 to 2002
- Risen by 5% 2003 to 2004 (partly due to rise in imported food and drink)...

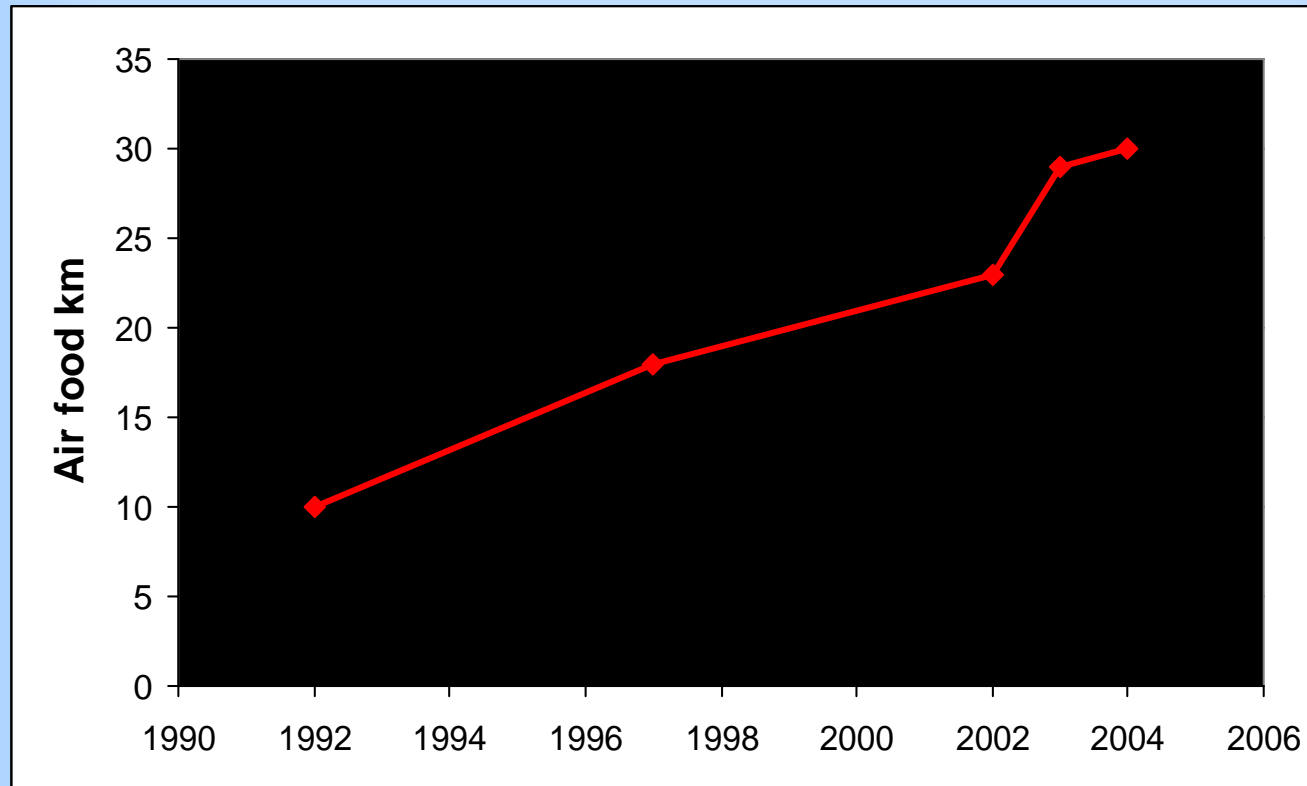
## 2. Dis-aggregated



**Note there is a difference between HGV vehicle km and tonne km**

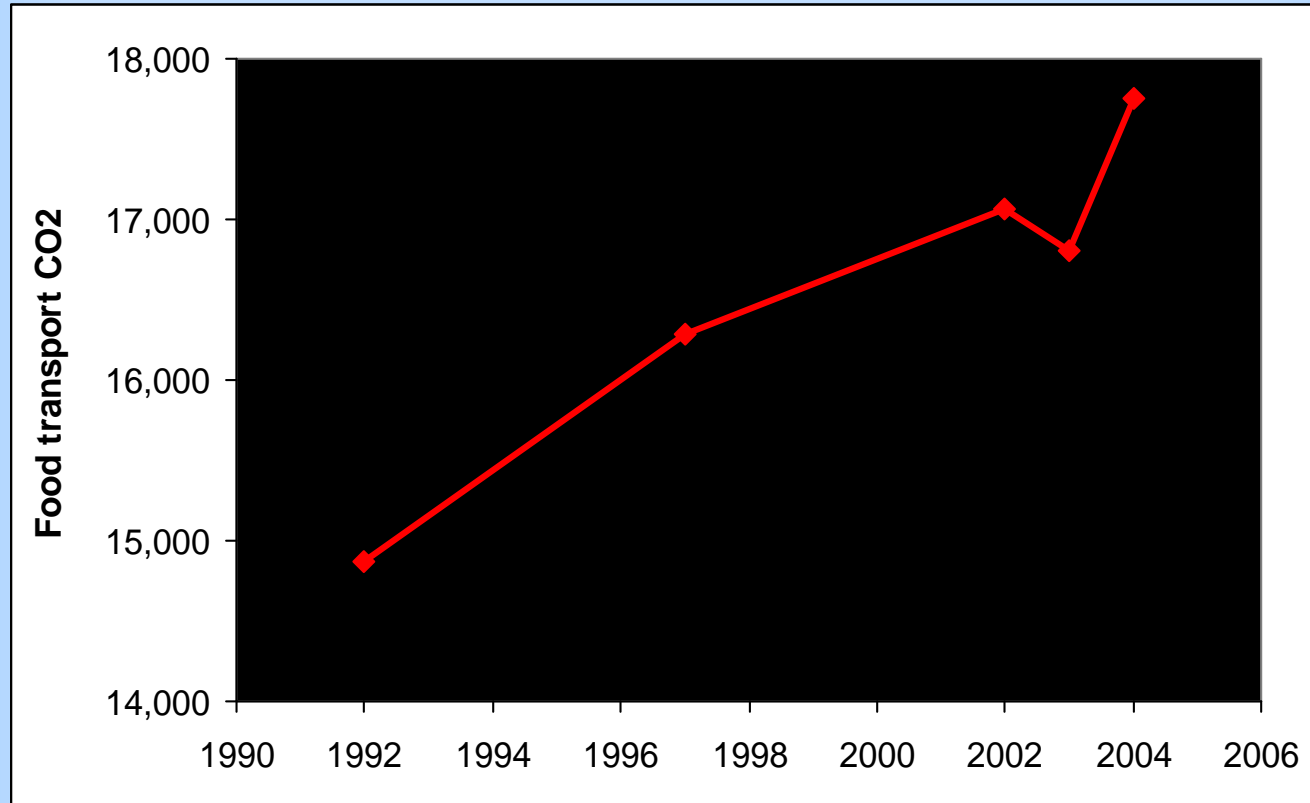
- Food vehicle km relatively stable 1992 to 2002
- Large increase (26%) in tonne km from 1992 – 2002 - efficiency / size

### 3. Aviation Food Vehicle km



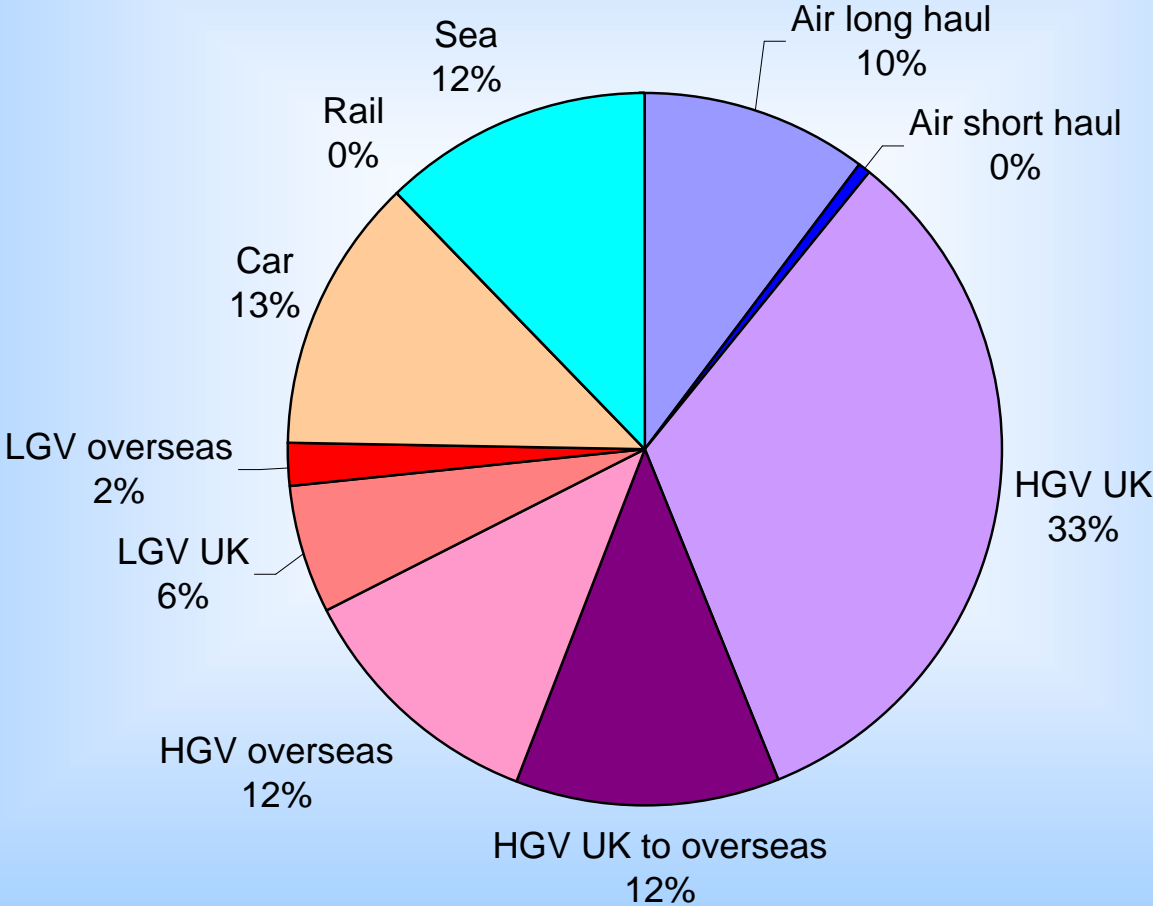
- Fastest growing mode > increase 140% from 1992 to 2002
- Increased by 30% from 2002 to 2003, but only small increase to 2004 (2%)
- Air transport = 0.1% vehicle km, 1% tonne km, 12% CO<sub>2</sub>

## 4. Food Transport CO<sub>2</sub> emissions (kt)



- Increased by 15% from 1992 to 2002 – opposite direction to GHG target
- Increase 2002 to 2004 further 4%
- ~0.7 tonnes per household per year (0.3 tonnes per person per year (3%))

# CO<sub>2</sub> emissions



# Which means?

Valid indicator – needs to be measured – trends examined

- More difficult question is what to do with the information, i.e. policy response
- And what does this tell us about overall sustainability of food chains ?
- *In like for like systems, with identical food supply chains, reducing food transport will improve sustainability (and reduce CO<sub>2</sub>)*

# Complexity in transport systems

- Transport step not always like for like!
- Transport efficiency and mode important.
- Aviation disproportionately high impact
- Trade-offs between distance, vehicle size and efficiency
  - Local food production and LGVs
- Difference between all transport impacts and one particular issue (e.g. CO<sub>2</sub>)
  - Different potential policy focus if only CO<sub>2</sub>



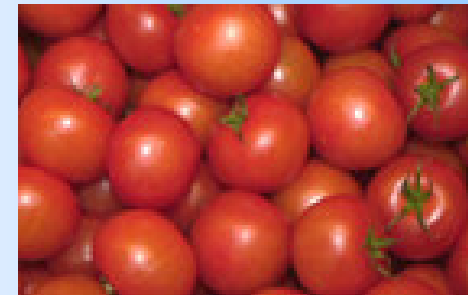
# Potential food transport policies

- Reducing car food shopping
  - Home delivery, provision of cycle/pedestrian access
- Reducing transport impacts
  - Cleaner vehicles, Improved logistics, Rail freight
- Internalising the external costs of transport
- Issue of whether to promote local food.....



# Environmental Trade-Offs

- Emissions/environmental impact vary in supply chains
  - Local food is not better *per se*
  - Environmental footprint will vary with production method
- Seasonal / non-indigenous issue (extra inputs)
- Organic ?
- Can lead to systems with higher food miles being more sustainable (and lower CO<sub>2</sub>)
- But a wider set of issues than just environment.....



# Social and Economic Trade-Offs

- Benefits to UK rural economies
- Vs. Developing country imports
  - Local development benefits (poverty)
  - But longer distances
- Prices, consumer choice
- Freshness, nutrition (5 a day and health effects)
- Very difficult trade-offs between what is best overall
- Lower CO<sub>2</sub> does not necessarily mean food is more sustainable



# What is 'best', is determined by viewpoint

- Strong sustainability = strong environmental view
  - Believe not valid to trade-off (to substitute) positives and negatives of sustainability
    - i.e. human benefits not a valid substitution for environmental dis-benefits,
  - Precautionary stance on GHG emissions
- Weak sustainability = strong economic view
  - Environmental, social and economic effects are substitutable
  - 'Food miles' not an issue as long as environmental externalities are internalised
  - Advocate free trade & lower subsidies (and trade and development benefits)
- Different viewpoints implies alternative policies (UK support vs. imports)

# Recent progress

- Remains strong pressure on 'Food Miles' as an issue
  - Strongly influenced by NGO and interested groups
  - Easy concept for consumers to grasp, despite the problems
- Move to country of origin + mode labelling (food miles)
- Early stages of food carbon labelling, debate on objective
  - 1) industry own estimates, benchmarking, internal improvement
  - 2) reference estimates on food types, e.g. to highlight high CO<sub>2</sub> to consumers
  - 3) Differentiated estimates by brand

# Conclusions

- Food transport has increased over the past 20 years
- Transport has direct negative impacts on sustainability (including CO<sub>2</sub>)
- Single food miles indicator is too simplistic
- Move to consider food transport as a part of the overall food chain
- Increasing move to a single issue (CO<sub>2</sub>) despite the wider sustainability issues
  - Issues with how to communicate to consumers (to simplify the complex)
  - There is no definitive 'best' answer – different perspectives important
  - Urgent need to understand these trade-offs – key research gap

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