# The Validity of Food Miles as an Indicator of Sustainable Development

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# 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
- Potential use of food miles as sustainability indicator

  - http://statistics.defra.gov.uk/esg/reports/foodmiles

# Study Objectives

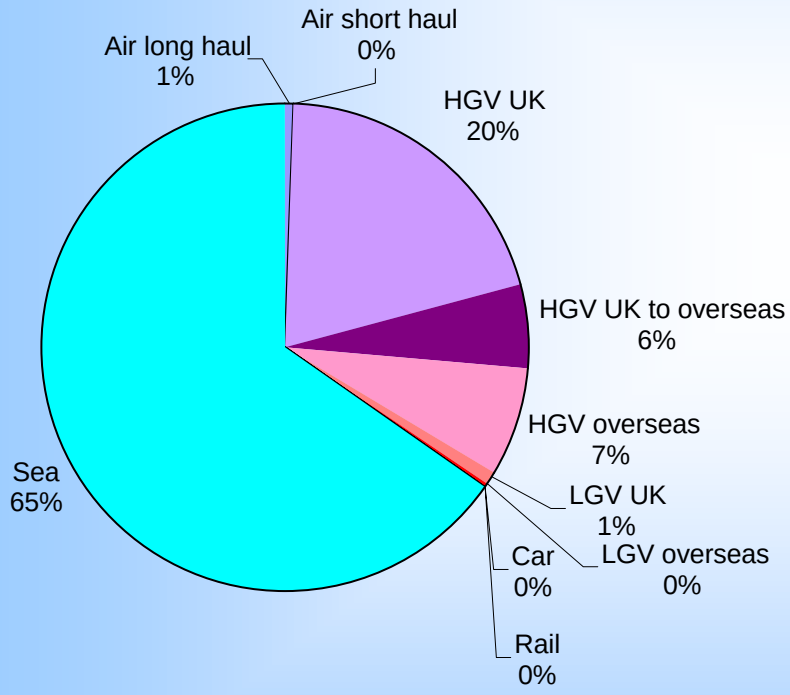
- To compile a food miles dataset covering the supply chain from farmer (both UK and overseas) to consumer ( 1992, 1997 and 2002 )
- To assess the main trends leading to increases in food miles around the UK and overseas
- To identify and quantify the economic, environmental and social impacts of food miles
- To develop a set of key indicators which relate food miles to their main impacts on sustainability
- Aim - easily available statistics, updated annually, linked to wider FISS

# Why the Increase in Food Miles?

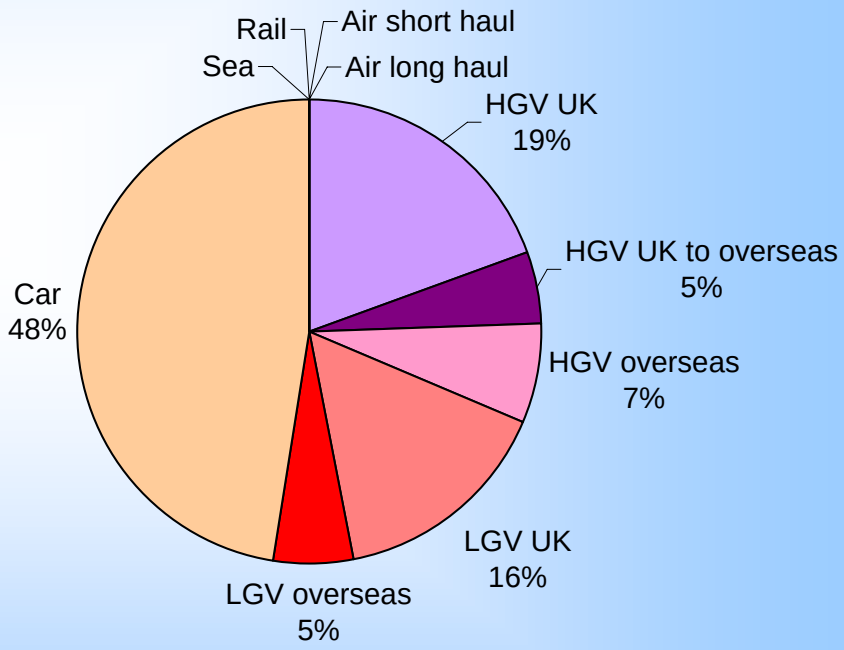
- Globalisation of food industry - wider sourcing, imports & exports
- Concentration of the food supply base - fewer, larger suppliers (yr)
- Major changes in delivery patterns
  - Food through supermarket regional distribution centres, more use larger HGVs
- Centralisation and concentration of sales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

# Measurement metric

## Tonne km

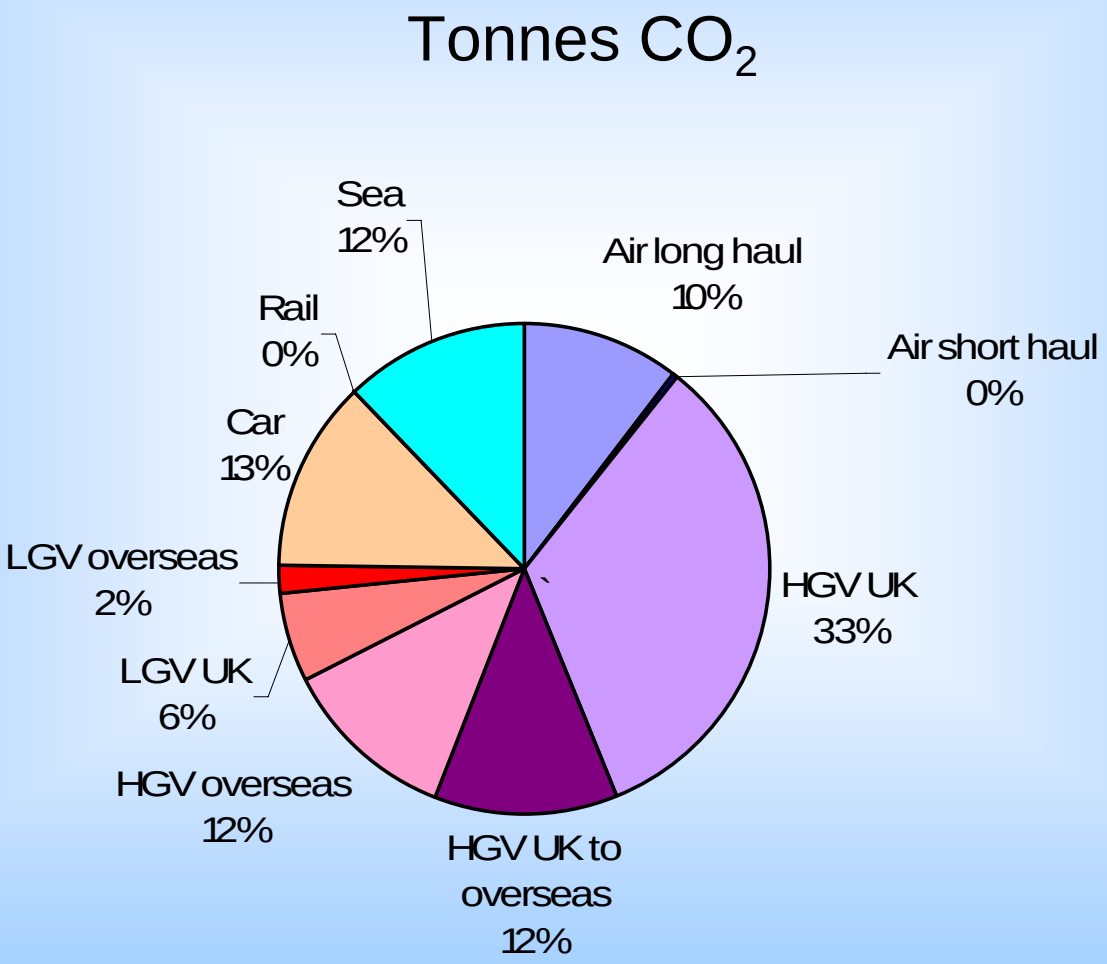



## Vehicle km




Modal variation with metric

# Measurement Metric



# 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 25% of all HGV vehicle kilometres in the UK
- Food transport produced 19 million tonnes of carbon dioxide in 2002 (2%)
- Significant emissions of air pollutants

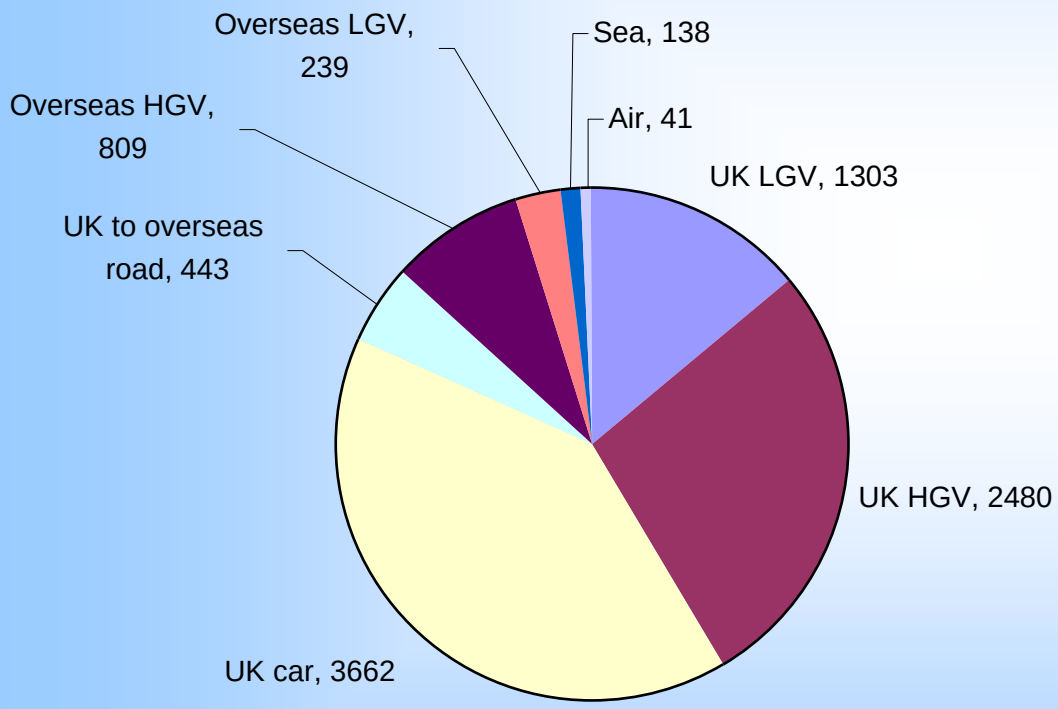
# And significant in economic terms

- Direct environmental, social and economic costs of food transport
  - Costs of congestion
  - Accidents
  - Infrastructure
  - Emissions ($CO_2$, Air Pollutants)
  - Noise

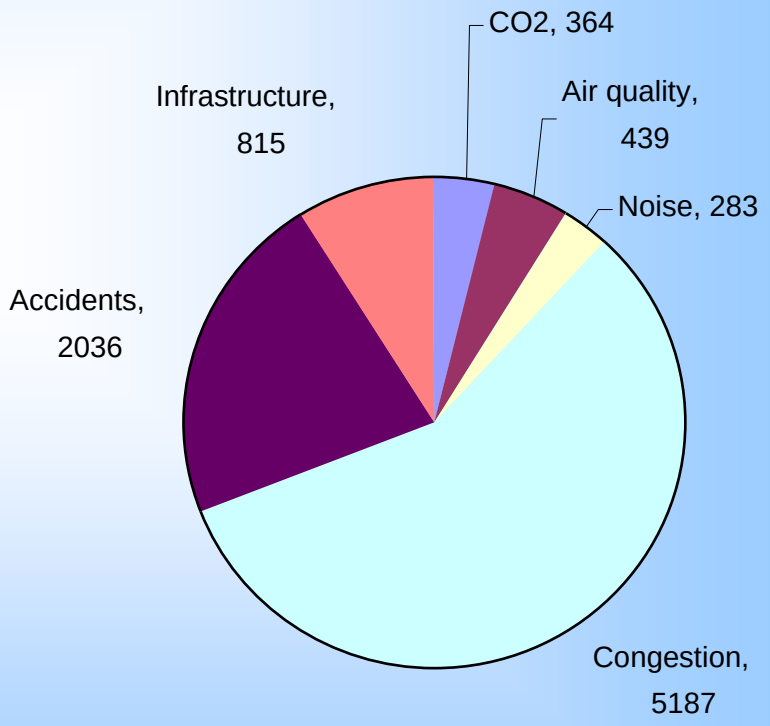
**Estimated at £9 billion / year !**

# Social costs - Split by Mode and by Impact

## Mode




## Impact



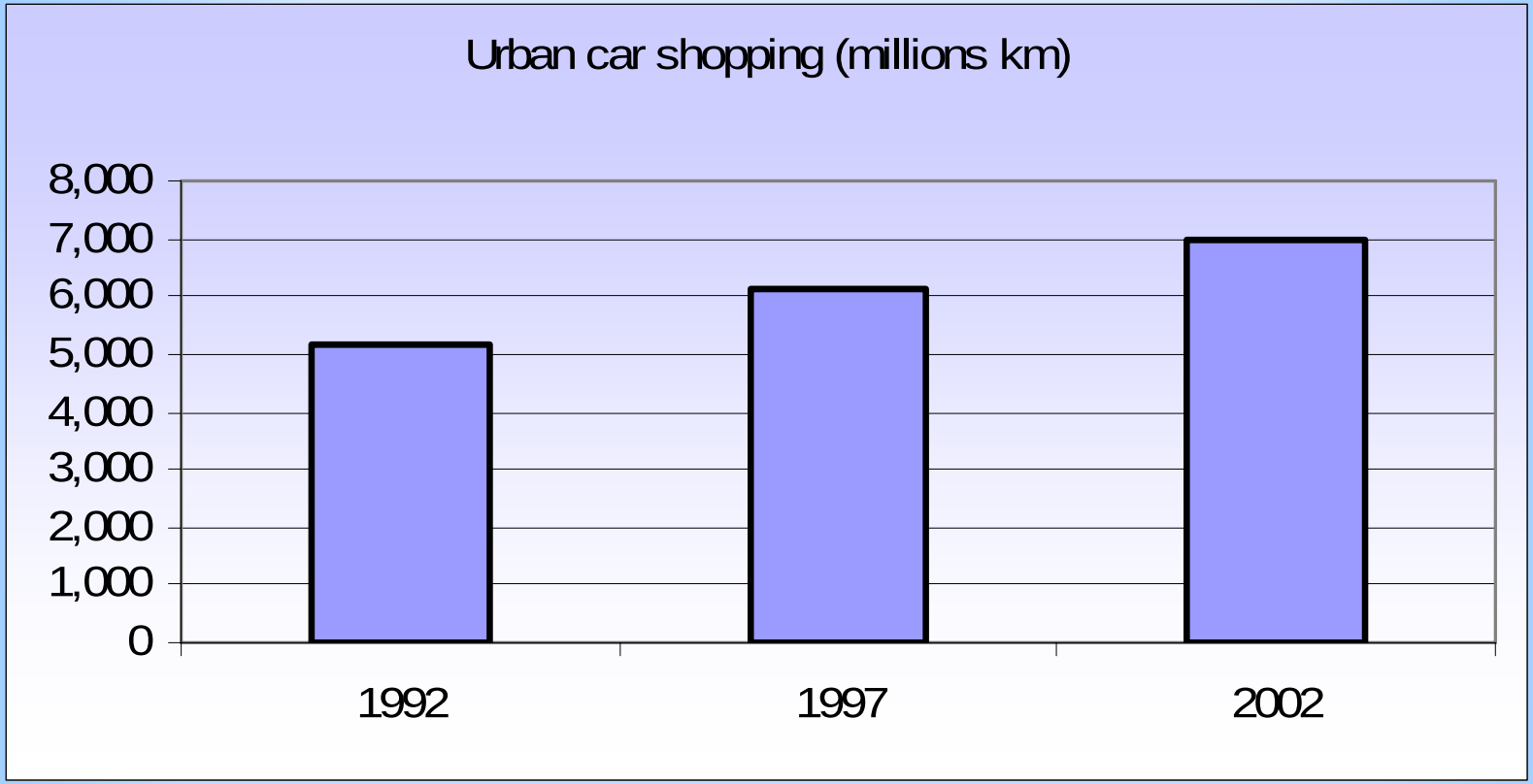

HGV dominates infrastructure, noise and pollution, car high congestion and accidents

# Study Recommendations

- Recommend indicator is needed, but food miles alone is too simplistic
  - **Urban food kilometres** – captures car use
  - **HGV food kilometres** – captures lorry transport
  - **$CO_2$ emissions** – captures many emissions missing in current inventories
  - **Air food kilometres**
    - Air transport highest $CO_2$ emission per tonne – 1% tonne km but 11% of $CO_2$ emissions
    - Growing extremely quickly

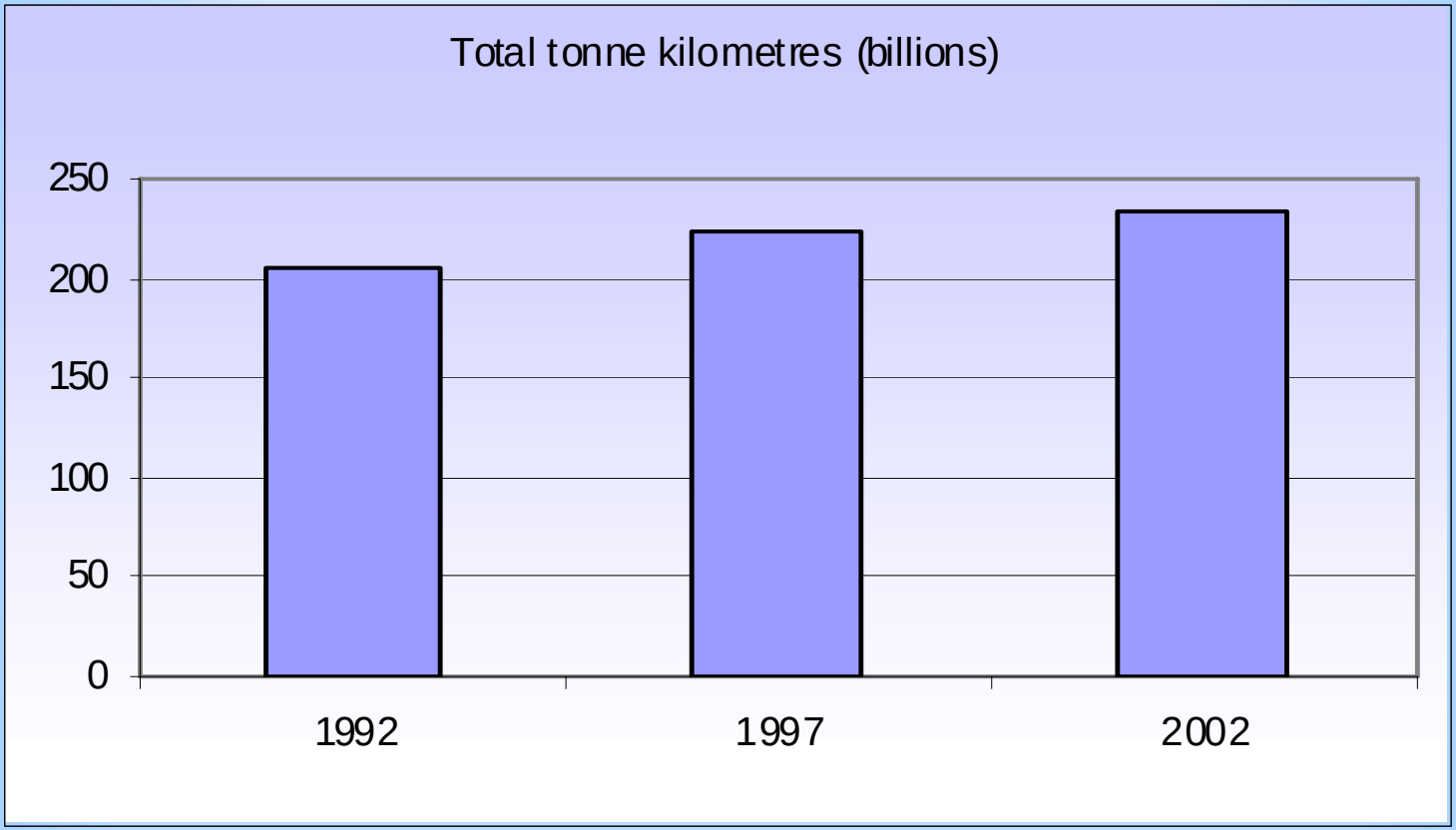
Government accepted recommendations, working to collate indicators

# Trends - Higher Car Shopping



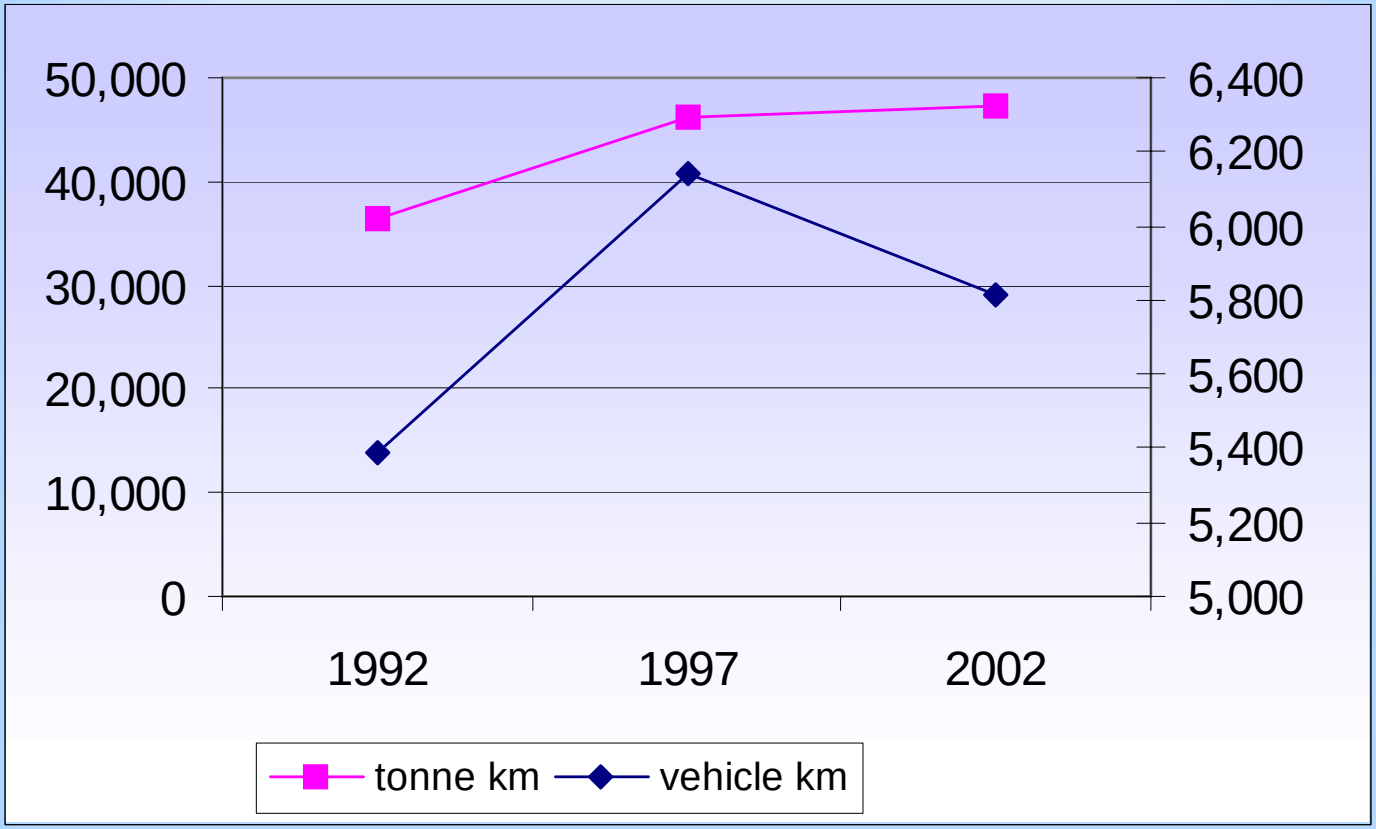

**Urban food kilometres** – increase 27% on 1992 – ownership & patterns

# Trends - Higher HGV Tonne kilometres



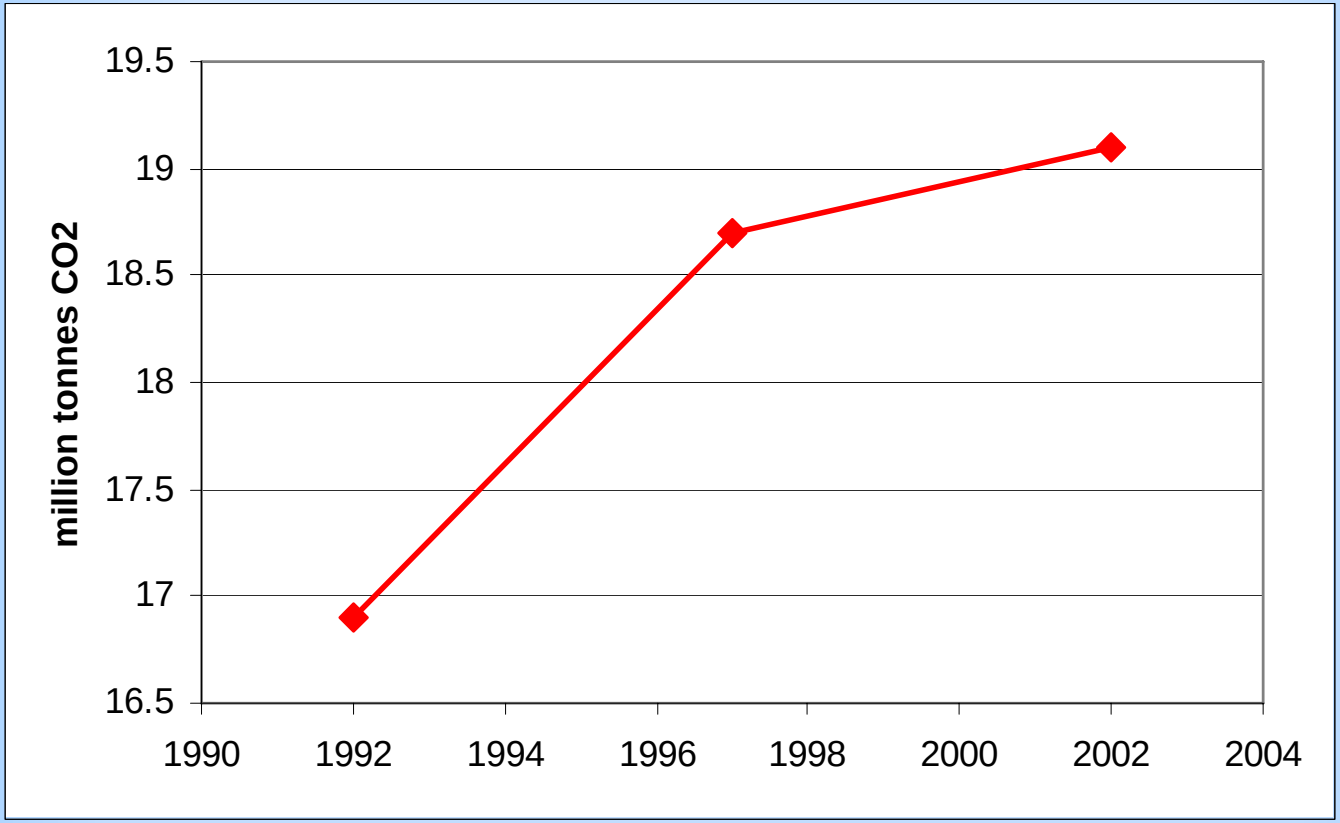

Up 36% since 1992, over 100% since 1974

# HGV tonne and vehicle kilometres



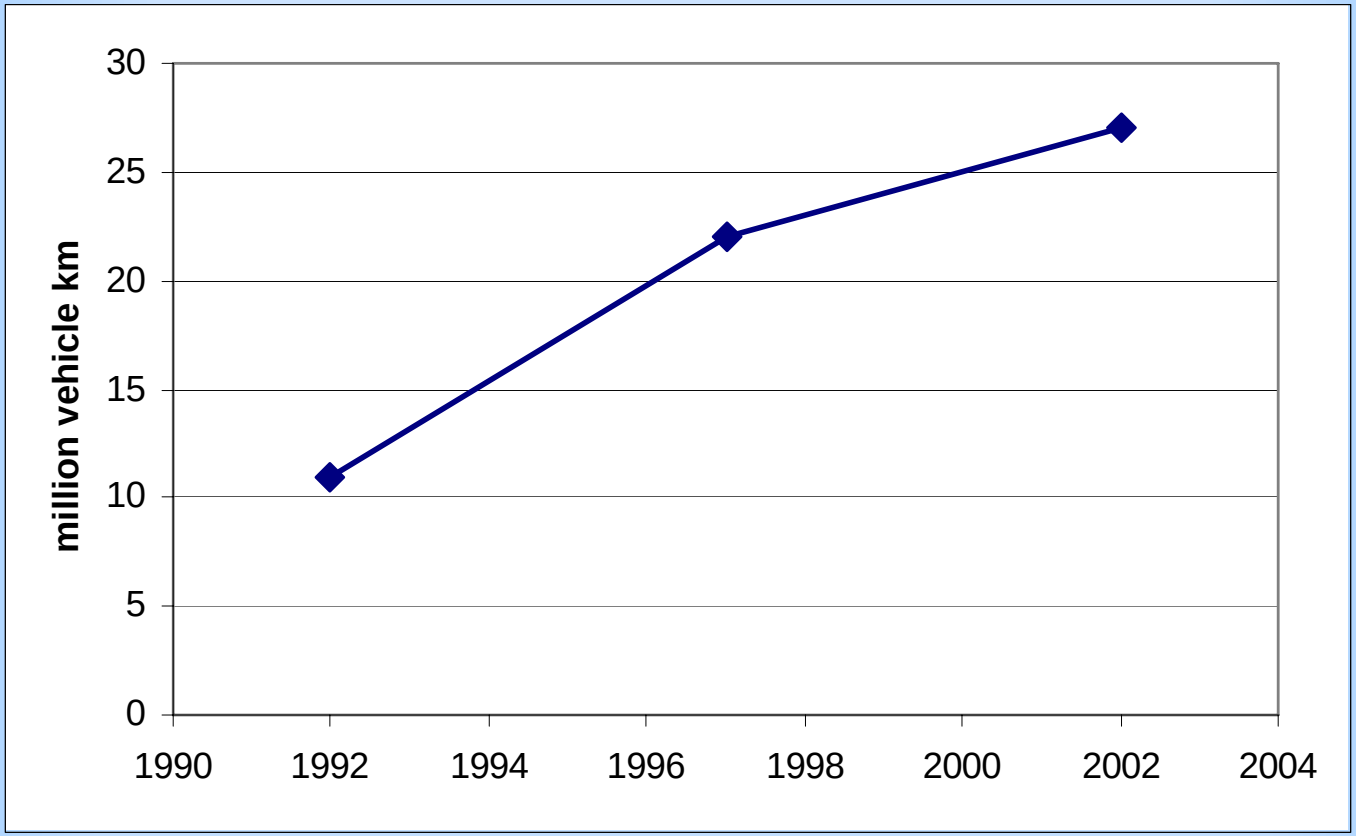

Vkm - Efficiency improvements – larger vehicles and higher load factors

# Increased $CO_2$ emissions - Food Transport




Increased by 12% in ten years –opposite of target

# Increased Aviation Transport for Food




Fastest growing mode - > doubled over ten years (140%)

# Which means?

- Valid indicator - that should be measured
- In like for like systems, with identical food supply chains, reducing food transport will improve sustainability
- But….
- Transport mode is important.  Aviation disproportionately high impact
- Trade-offs between distance, vehicle size and efficiency
- And variation in food chains …..need to consider the wider environmental social and economic issues and trade-offs with food miles

# ……(complexities)

- Depends on the sustainability of food production
  - Energy balance Spanish tomatoes < UK out of season
  - Imported organic (1000 km) < conventional UK
- Depends on wider social, environmental and economic issues
  - Consumer choice and nutrition
  - Trends affecting UK producers – UK rural economy
  - International trade and developing countries - - -

# Potential policies

- Sourcing food more locally where appropriate
  - Consumer awareness/labelling, public procurement, support local food initiatives
- Reducing car food shopping
  - Home delivery, Support for local and in-town shops, Provision of cycle/pedestrian access
- Reducing transport impacts
  - Cleaner vehicles, Improved logistics, Rail freight
- Internalising the social costs of transport
- Improving the wider sustainability of the food chain
  - From energy efficiency to ethical trading

# Conclusions

- Food transport has increased over the past 20 years
- Has direct negative impacts on sustainability through transport burdens
- These impacts are significant, and are poorly captured by existing indicators
- Single indicator is too simplistic – need to capture a range of impacts
- Food transport has a complex relationship to food chain sustainability
- Can be valid trade-offs between food chains and food transport
- Need to ensure balanced policy, consider ESE across whole food chain