Promoting low carbon vehicles: can we influence attitudes to change car-purchasing behaviour?

Dr Ben Lane, Ecolane Transport Consultancy

Presentation to King Review, 12th Sept 2007

Key findings from recent attitudinal research focusing on car-buying and travel behaviour

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Scope of presentation

1. Deficit model: providing information
2. Knowledge and attitudes
3. Car-buying: paradoxes and barriers
4. The attitude-action gap
5. Effective interventions
6. Community-based social marketing
7. Summary

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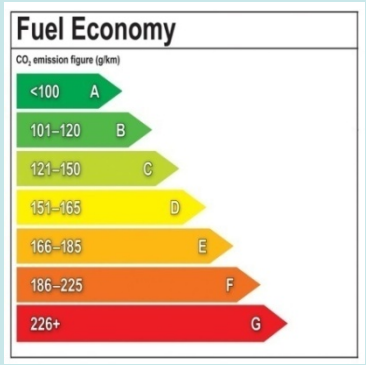
Deficit model: providing information



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Deficit model: providing information

➢*Are You Doing Your Bit?* campaign considered as "inadequate" in bringing about behaviour change.
(HC Select Committee)

➢"Information, on its own, will only change consumer behaviour in a few exceptional cases" **(Bibbings/ WCC 2004)**

➢Information does not necessarily lead to increased awareness, and increased awareness does not necessarily lead to action.

Information provision, whether through advertisements, leaflets or labelling, must be backed up by other approaches.

(Demos & Green Alliance 2003, cited in DEFRA 2005)

Source: HCSC 200X, DEFRA 2005

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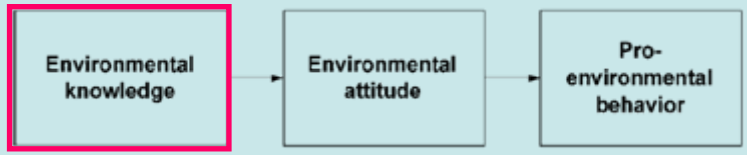
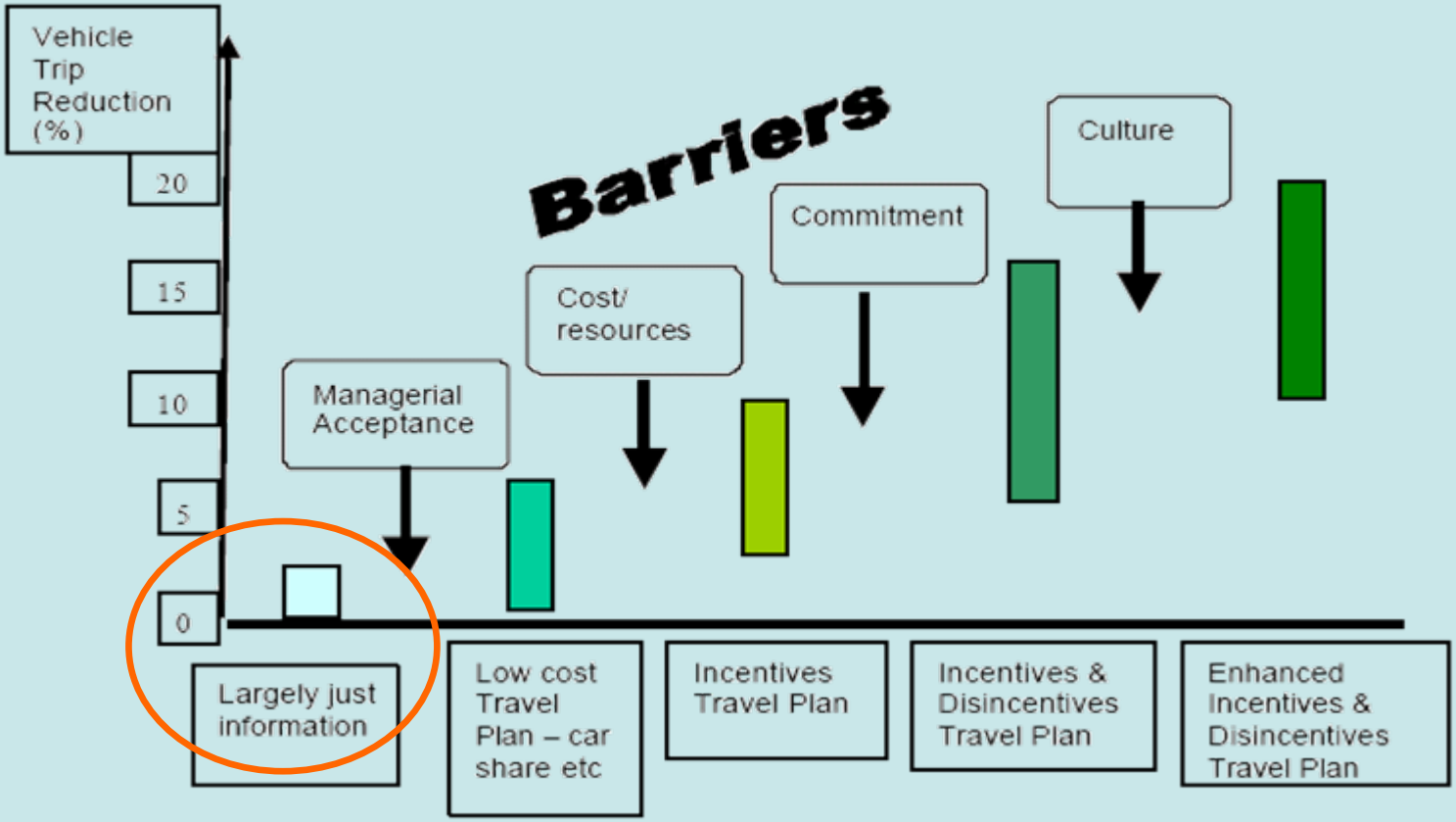
Deficit model: providing information

Stages of typical workplace travel plan





Source: Potter et al. 2004

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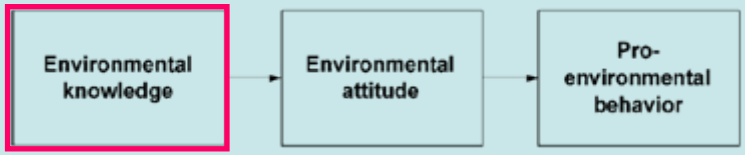
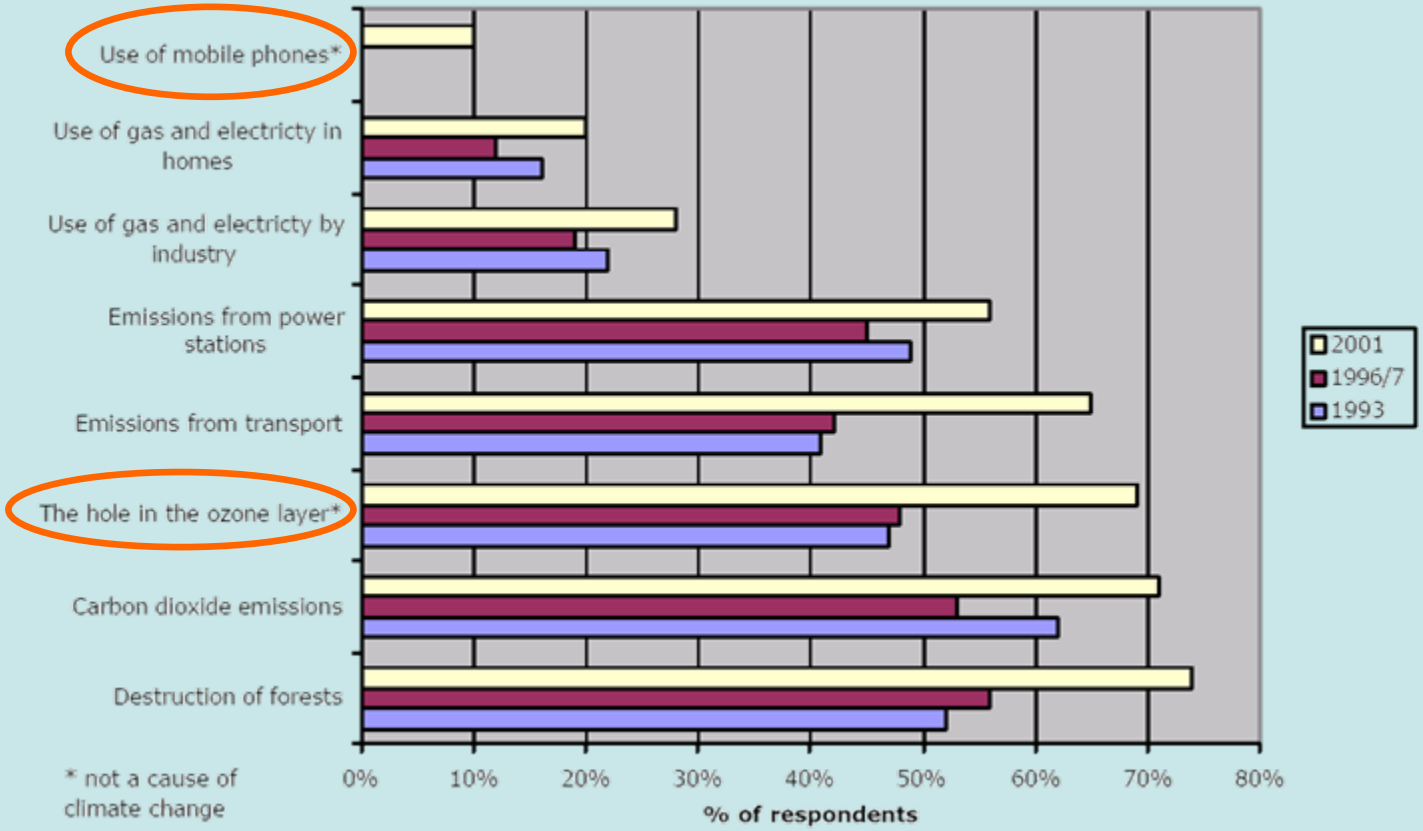
Deficit model: providing information

UK public understanding of climate change





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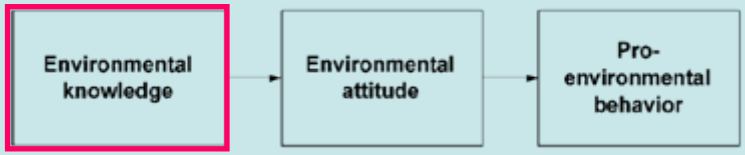
Source: DEFRA 2002

Deficit model: providing information

Knowledge of fuel use and vehicle emissions



- Low appreciation of 'mpg'
  - Assume similar 'mpg' for all cars within a class
  - Improving 'mpg' compromises performance and safety
- Public knowledge of typical vehicle exhaust emissions is patchy
  - Concern for local pollutants often higher than CO2
  - As high an awareness of CO as CO2
- Drivers hold negative misconceptions about low emission cars
  - *"LPG is dangerous"*
  - *"hybrids have limited range and need a special recharge point"*
  - *"no positive tax incentives for biodiesel as yet…"*

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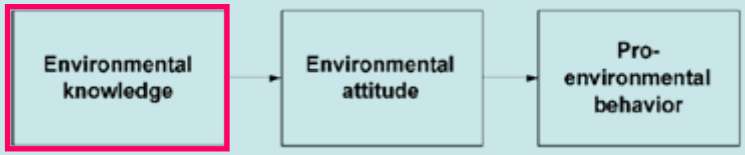
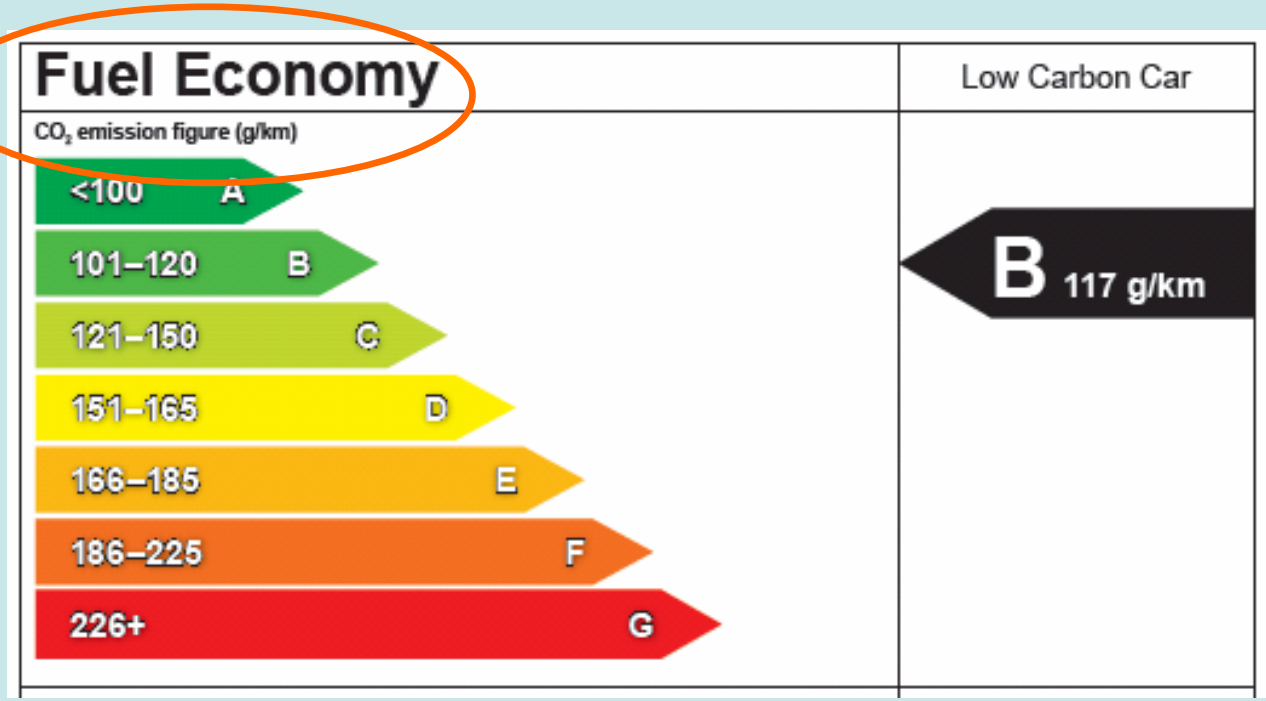
Source: TRI/ECI 2000, Whelan 2000, Kurani 2002/06, Ecolane 2000, DfT 2003

Deficit model: providing information

Knowledge of fuel use and vehicle emissions



- The relationship between inputs (fuel) and outputs (emissions) is only very generally – if at all – understood by most drivers (DfT 2003)



Source: DfT 2003

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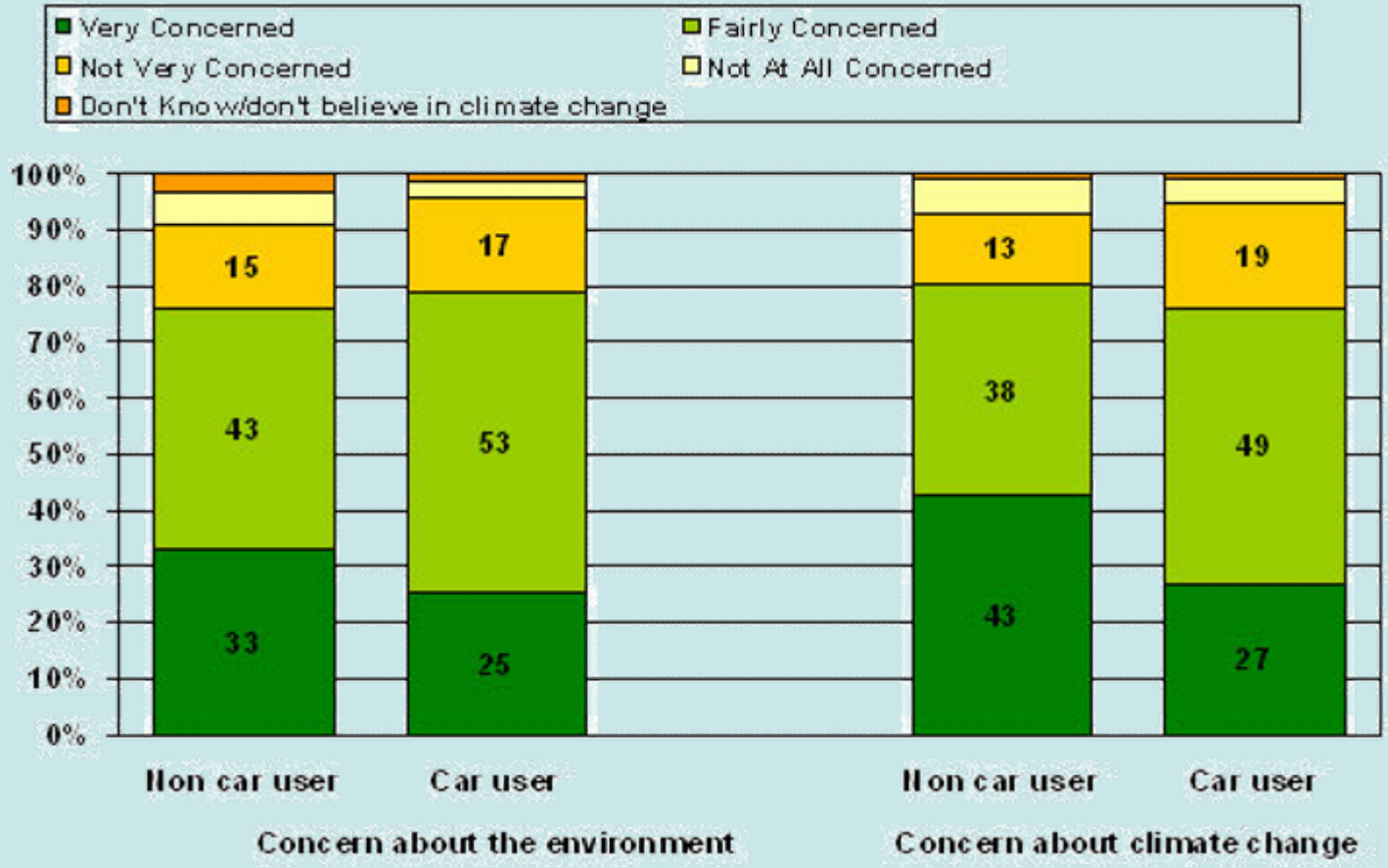
Attitudes and behaviour

Level of concern about climate change



Source: ONS 2006

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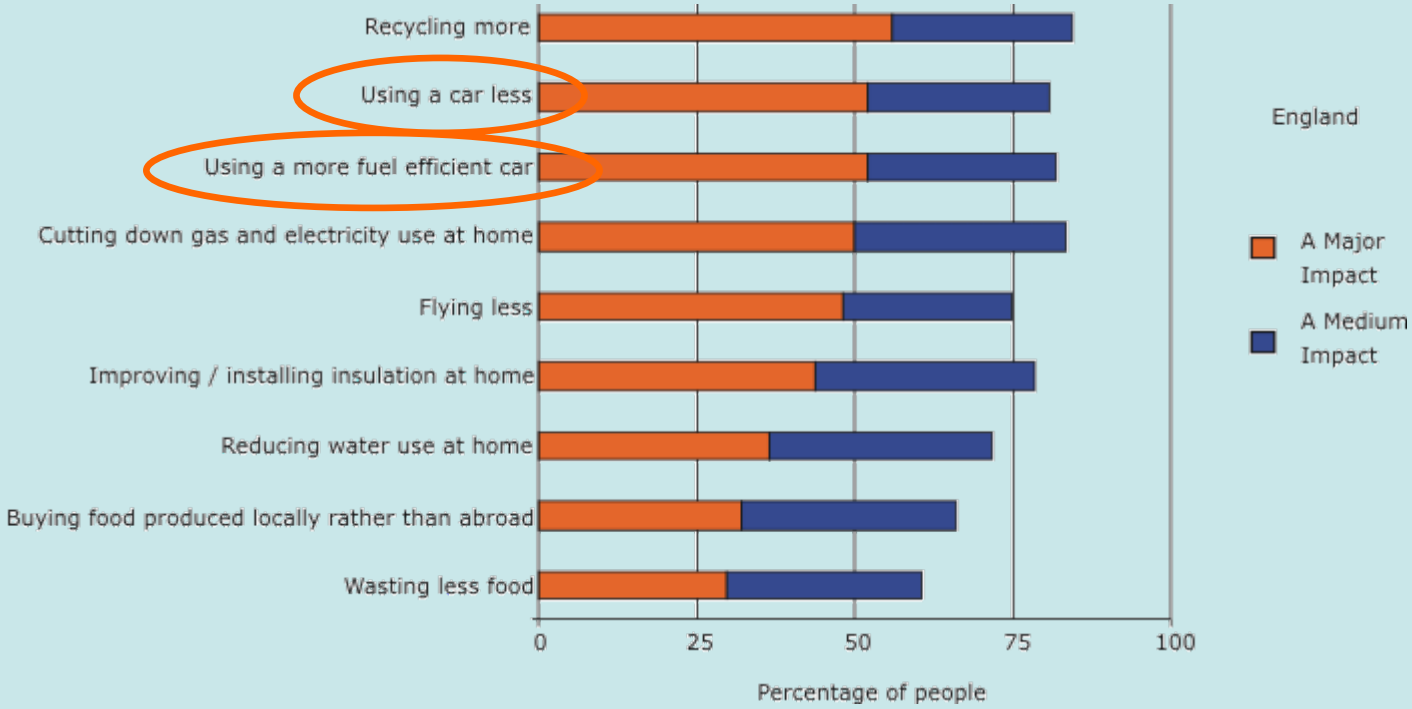
Attitudes and behaviour

Attitudes and actions to mitigate against climate change

Beliefs about the impact of behaviours on the UK's contribution to climate change if most people in UK were prepared to do them, 2007



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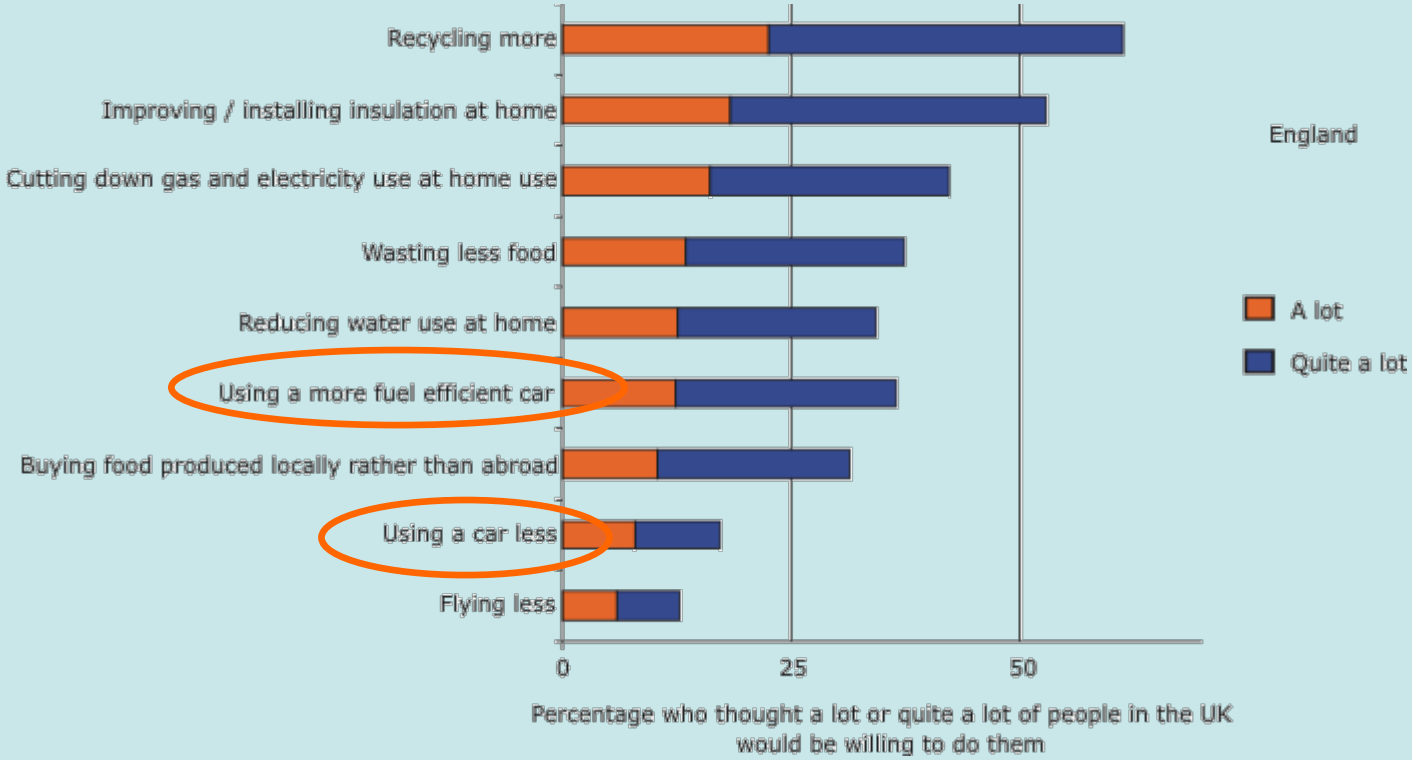
Source: DEFRA 2007

Attitudes and behaviour

Attitudes and actions to mitigate against climate change

Beliefs about the number of people in the UK who are willing to take up behaviours that could impact upon the UK's contribution to climate change, 2007



Source: DEFRA 2007

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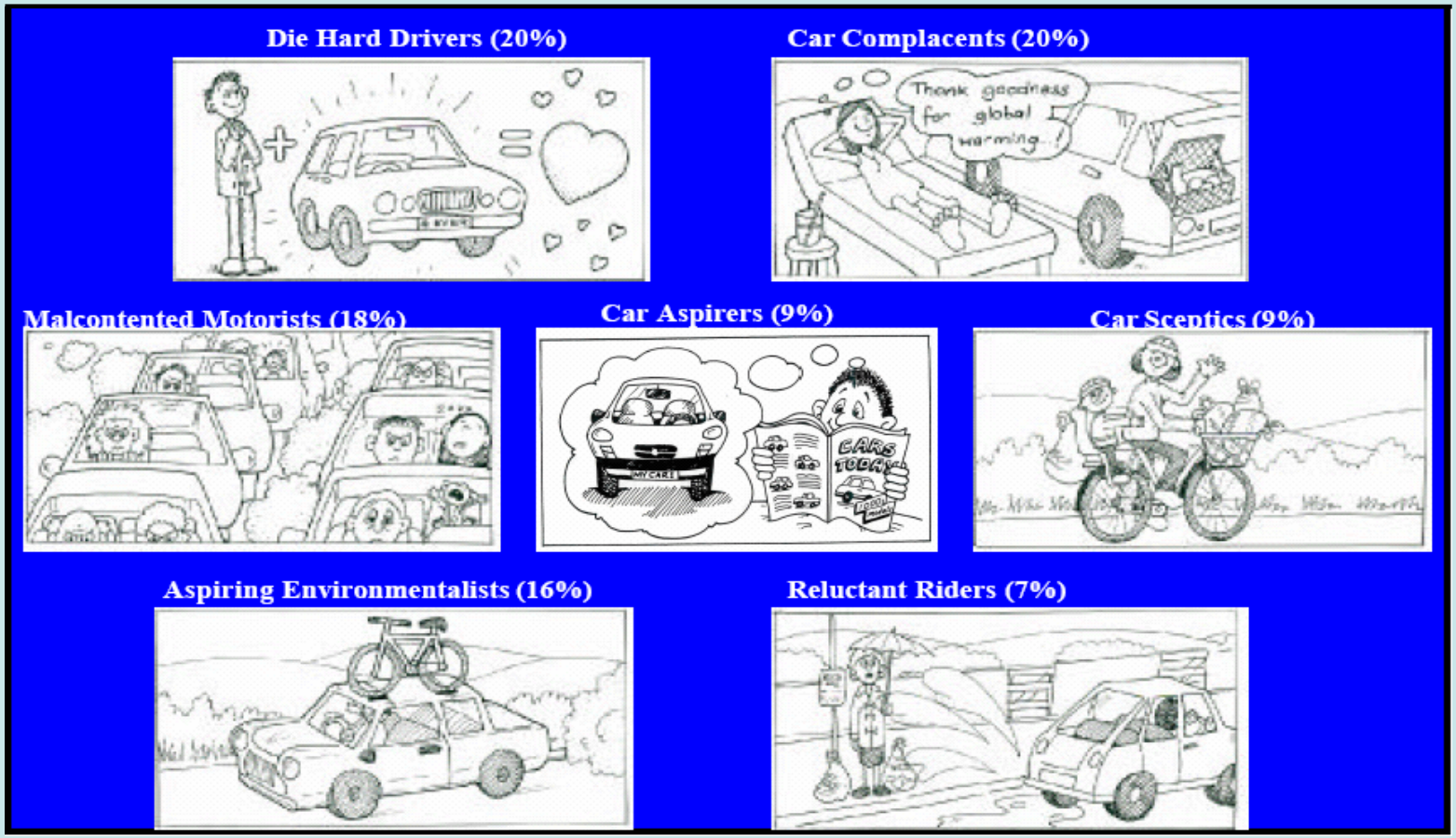
Attitudes and behaviour

Attitudinal segmentation (as opposed to demographic)



Source: Anable 2005

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Car-buying: paradoxes and barriers

Factors reported when deciding what car to buy

"Stop pretending [the] environment is the only issue that should matter to people" (Hounsham 2006)

- Capital cost
- Fuel consumption
- Size/Practicality
- Reliability
- Comfort
- Safety
- Running costs
- Style/Appearance

- Performance
- Image
- Brand
- Insurance
- Engine size
- Equipment levels

- Depreciation
- Experience
- Sales Package
- Dealership
- Environment
- Vehicle Emissions
- Road tax
- Alternative fuel

Source: DfT 2004

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Car-buying: paradoxes and barriers

The 'mpg' paradox

Although 'mpg' is reported as a key decision factor...

"For most [car-buyers], little effort is expended in comparisons of fuel consumption during the decision-making process"

- Raimund & Fickl 1999
- TRI/ECI 2000
- Boardman 2000
- Whelan 2000
- MORI 2003
- Kurani & Turrentine 2002 & 2006
- Johansson-Stenman & Martinsson 2006
- DfT 2006

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Source: TRI/ECI 2000 and as shown

Car-buying: paradoxes and barriers

The 'mpg' paradox

Reasons why 'mpg' not as important as reported:

- Assume similar 'mpg' for all cars within a class
- Little confidence in published fuel economy data
- Improving 'mpg' compromises performance and safety
- 'Mpg' is more often pre- and post-purchase priority
- Costs too complex to compute (mpg + p/litre → p/mile)
- Don't know what to do with 'mpg' figure!

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Source: TRI/ECI 2000, Whelan 2000, Kurani 2002 & 2006, DfT 2006

Car-buying: paradoxes and barriers

The 'mpg' paradox

DfT 2006: Consumer behaviour and pricing structures – 8 focus groups, 65 in-depth interviews

"The cost of fuel per mile was seen as an abstract concept. Respondents could not suggest a cost of fuel per mile for their car. .. [and] were unaware of the number of miles to the gallon for their car"

"Respondents generally did not think about, or estimate, the cost of making an individual car journey"

"[The] common unit for measuring fuel consumption was a 'tankfull' "

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Source: DfT 2006

Car-buying: paradoxes and barriers

The ‘mpg’ paradox

Fuel Economy	Low Carbon Car
CO_2 emission figure (g/km) <100 A 101–120 B 121–150 C 151–165 D 166–185 E 186–225 F 226+ G	B 117 g/km
Fuel cost (estimated) for 12,000 miles A fuel cost figure indicates to the consumer a guide fuel price for comparison purposes. This figure is calculated by using the combined drive cycle (town centre and motorway) and average fuel price. Re-calculated annually, the current cost per litre is as follows – petrol 80p, diesel 84p and LPG 39p. (VCA May 2005). **VED for 12 months** Vehicle excise duty (VED) or road tax varies according to the CO_2 emissions and fuel type of the vehicle.	£662 £50

Fuel Consumption:

Drive cycle	Litres/100km	Mpg
Urban	5.4	52.3
Extra-urban	3.8	74.2
Combined	4.4	64.2

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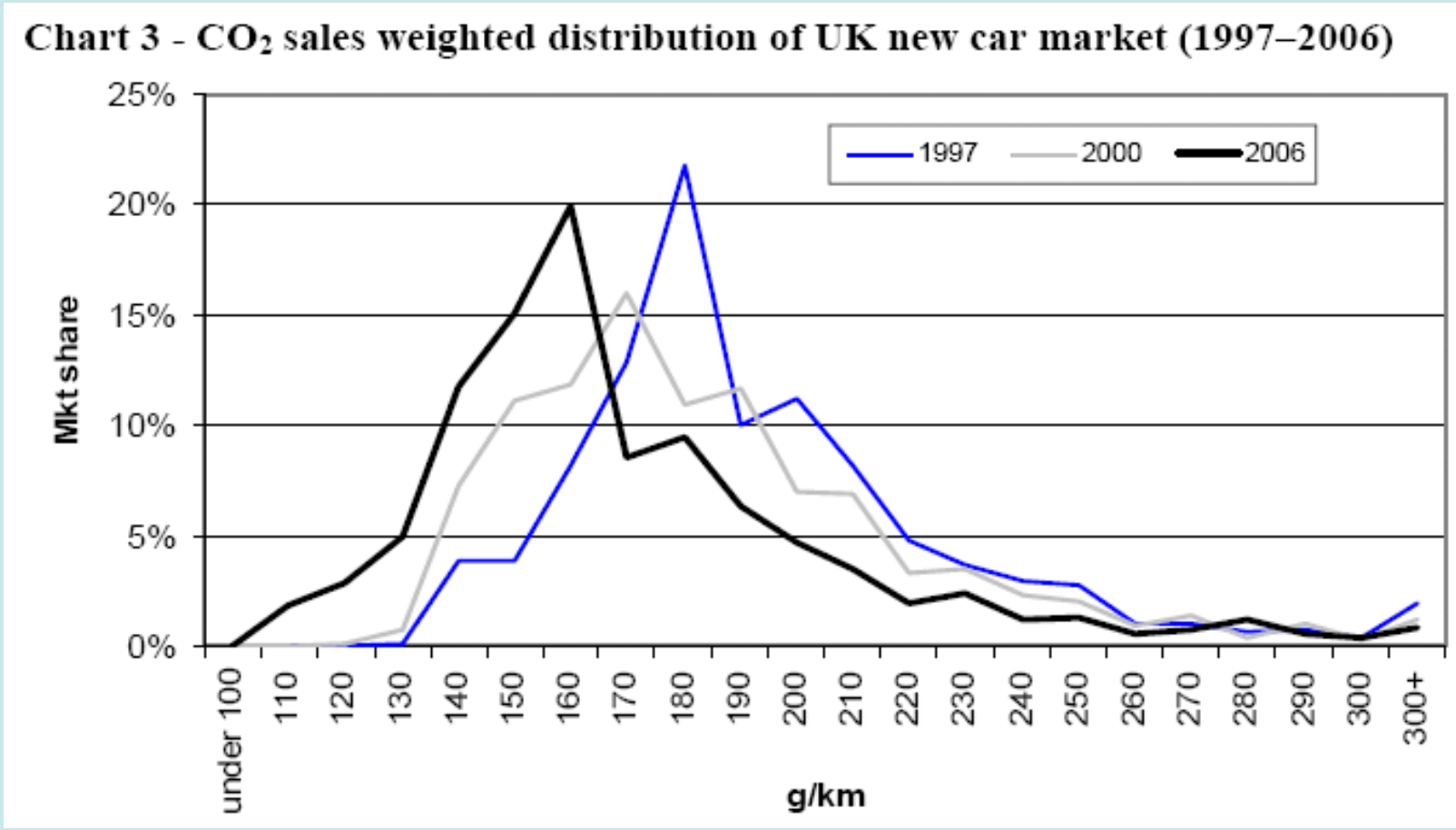
Car-buying: paradoxes and barriers

Reluctance to switch a lower carbon car



Source: SMMT 2007

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Car-buying: paradoxes and barriers

Reluctance to switch a lower carbon car

- Capital cost
- Fuel consumption
- Size/Practicality
- Reliability
- Comfort
- Safety
- Running costs
- Style/Appearance

- Performance
- Image
- Brand
- Insurance
- Engine size
- Equipment levels

- Hedonic pricing suggests that high mpg / low carbon cars are not as good value as other cars
- Size, practicality and comfort are all headline purchasing factors
- Although CO2/km may be falling, engine size and power rating are increasing
- Higher power/engine size → lower correlation between CO2/km and CO2/unit time

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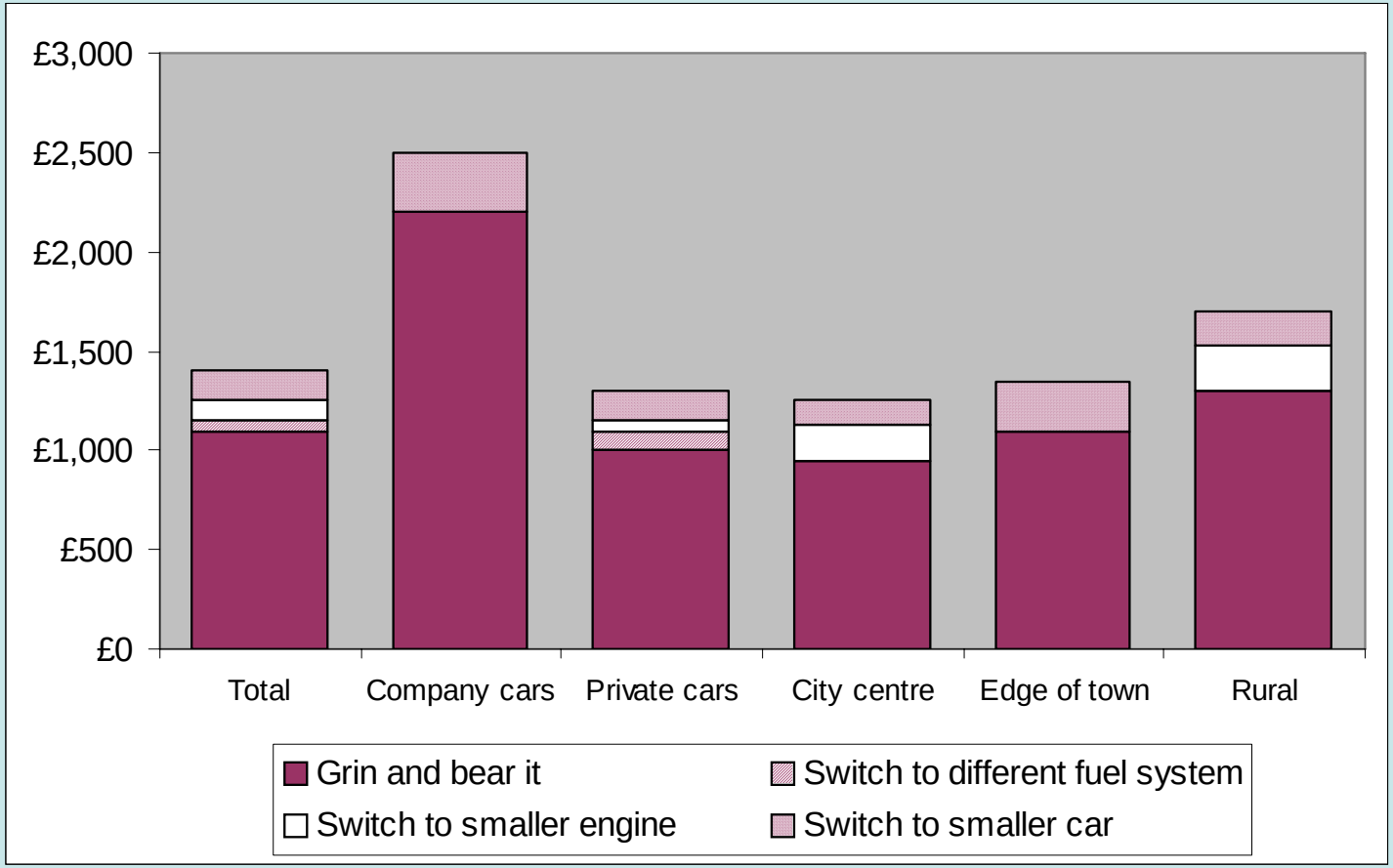
Source: DfT 2004, Ecolane 2005, Cousins 2007

Car-buying: paradoxes and barriers

Reluctance to switch a lower carbon car



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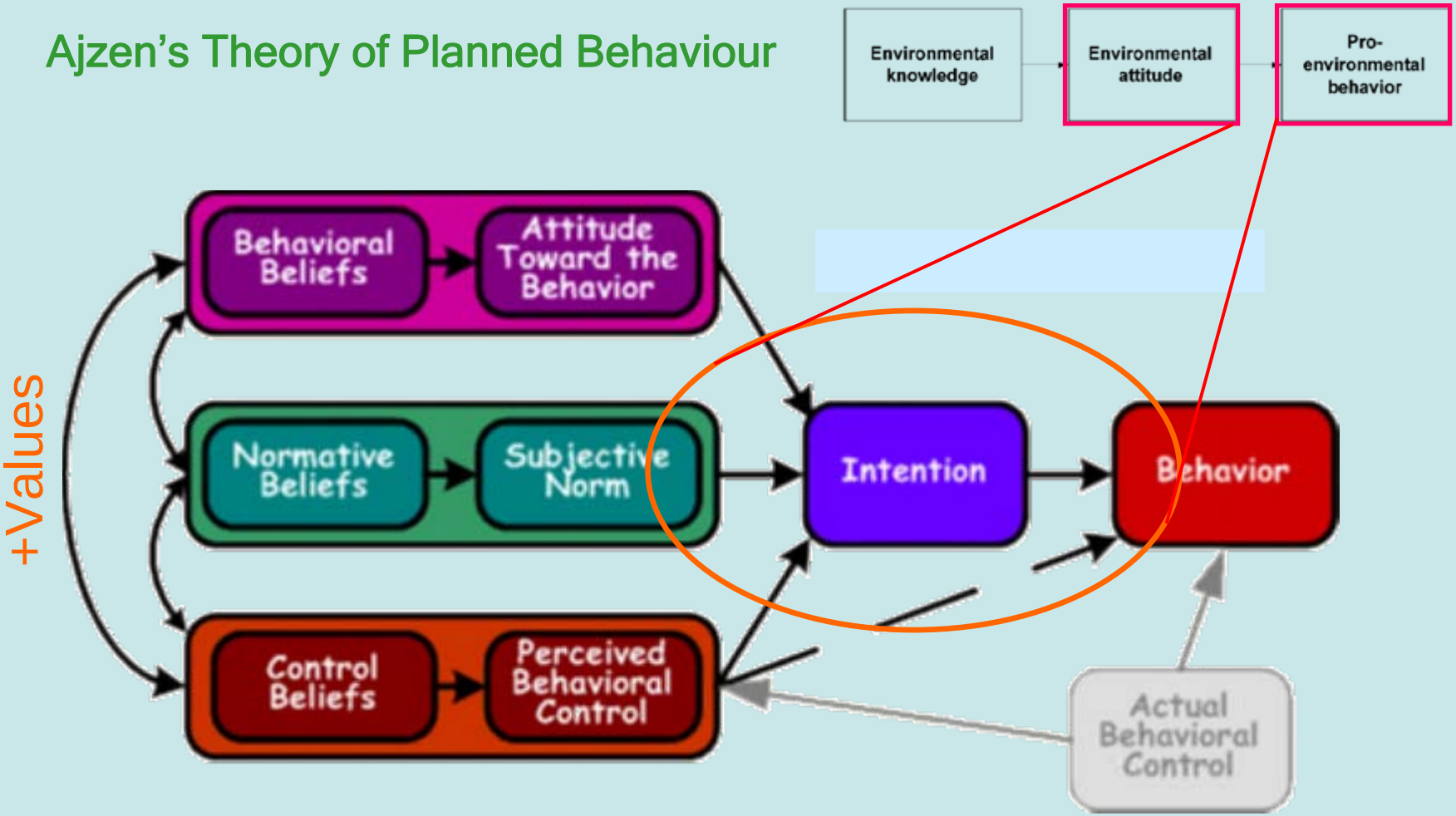
Source: RAC 2004, Morpace 2004

Attitude-action gap: theory

Ajzen's Theory of Planned Behaviour



Implies rational assessment

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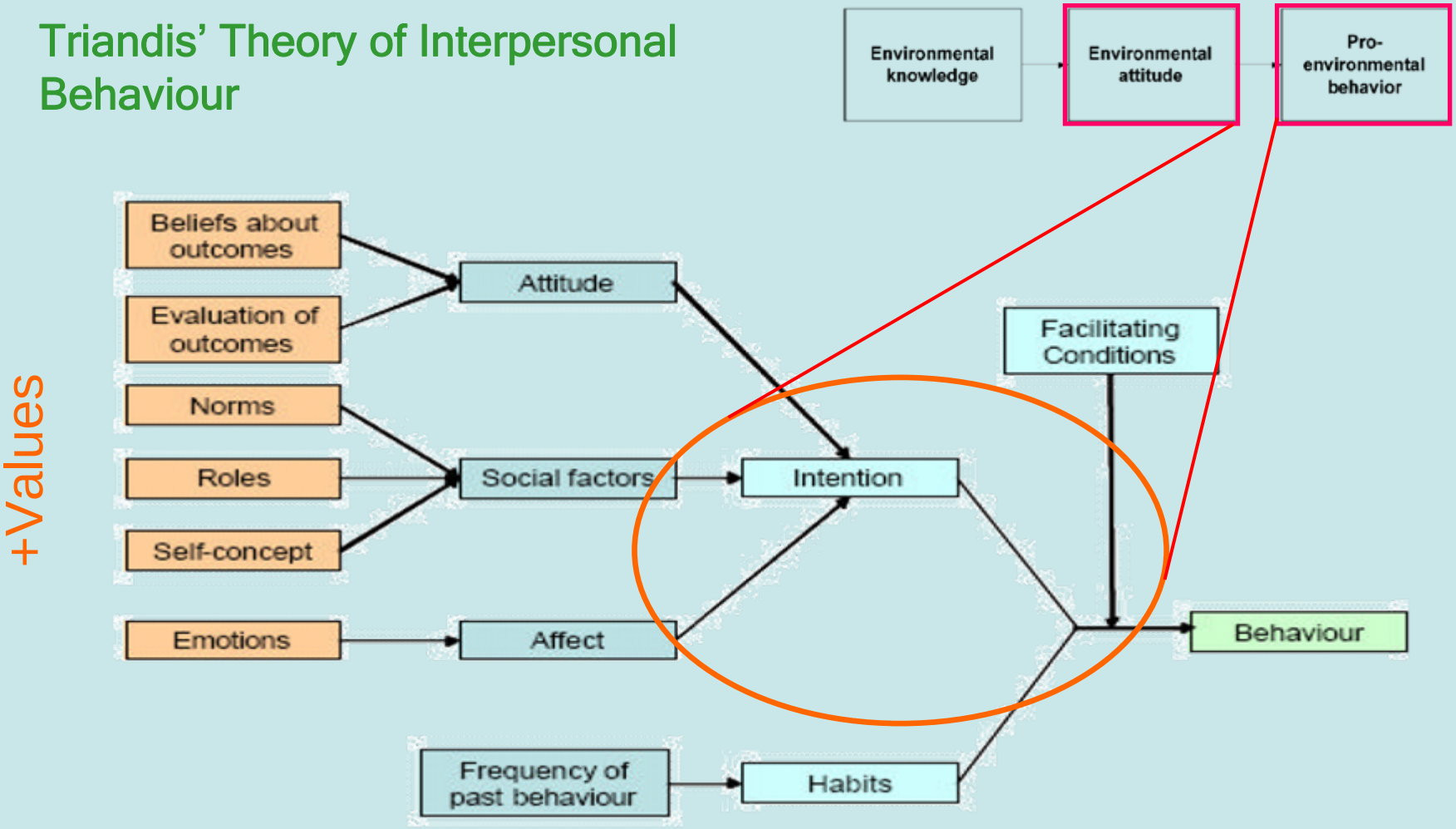
Source: Ajzen 2002

Attitude-action gap: theory

Triandis' Theory of Interpersonal Behaviour



Source: Jackson 2005

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Attitude-action gap: empirical

Sustainable Consumption and Production Taskforce 2007

Rational

- Cost – to buy and to run
- Reliability
- Size – car and engine
- Appearance
- Comfort – inside and out
- Brand / Make
- Safety
- Use – work/personal
- Auto vs manual
- Diesel vs petrol

Emotional

- Freedom / independence
- Affection
- Empowerment
- Status symbol
- Self esteem / image
- Makes people feel attractive
- Enjoyment of driving
- Privacy
- Safety

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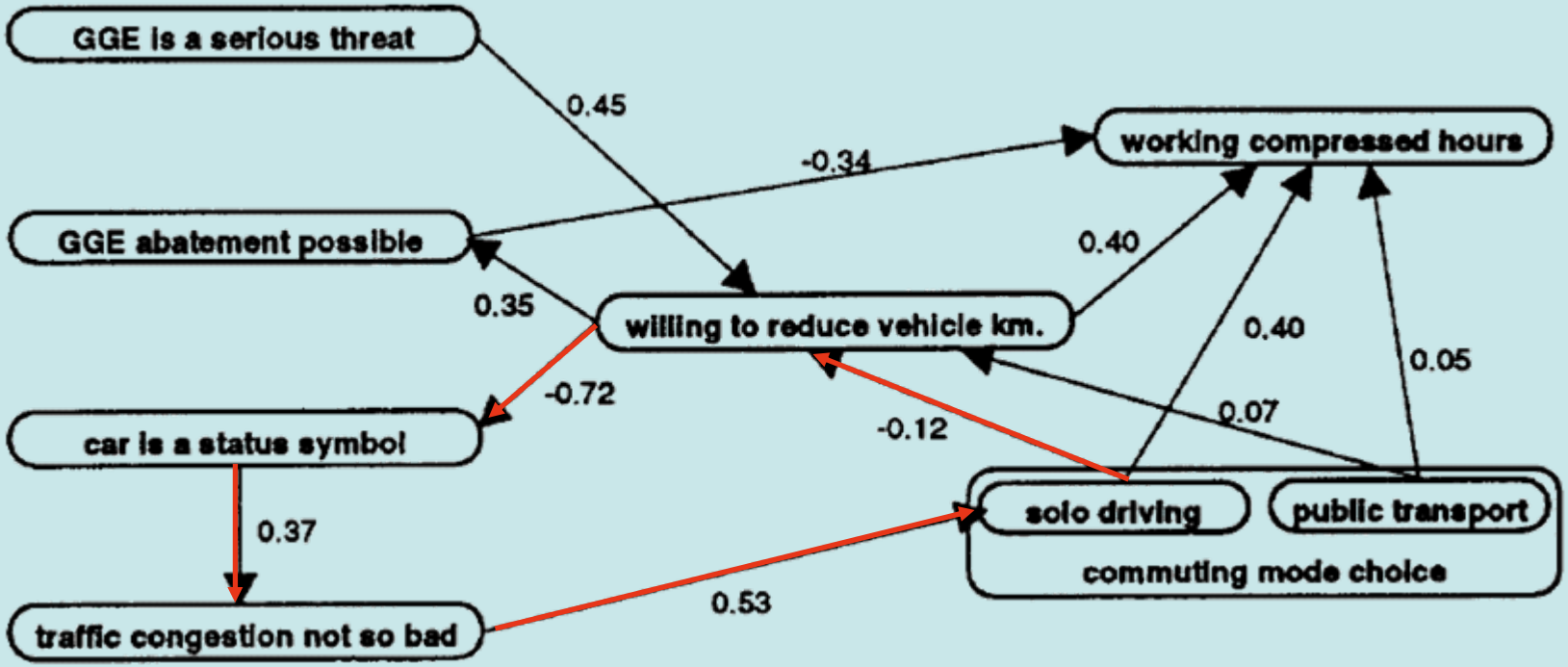
Source: SCP Taskforce 2007

Attitude-action gap: empirical

Australian commuters' attitudes and travel behaviour



Systems approach reveals stable positive/negative feedback → 'disruptive' behaviour change strategies

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Source: Golob & Hensher 1998

Attitude-action gap: empirical

Factors and issues that are involved in behavioural change

INDIVIDUAL SUBJECTIVE	INDIVIDUAL OBJECTIVE
• Values • Frames • Moral norms / sense of responsibility • Perceived behavioural control • Self efficacy/ agency/ locus of control • Denial • Instrumental attitudes • Affective attitudes • Identity and status	• Knowledge/ Awareness of consequences • Habit • *Personal capabilities*** • *Actual resource constraints***
COLLECTIVE SUBJECTIVE	**COLLECTIVE OBJECTIVE**
• Social dilemmas • Group cultures/ shared norms • Trust in others and in government	• Contextual/ Situational factors • Communication and the media • The nature of the climate change problem

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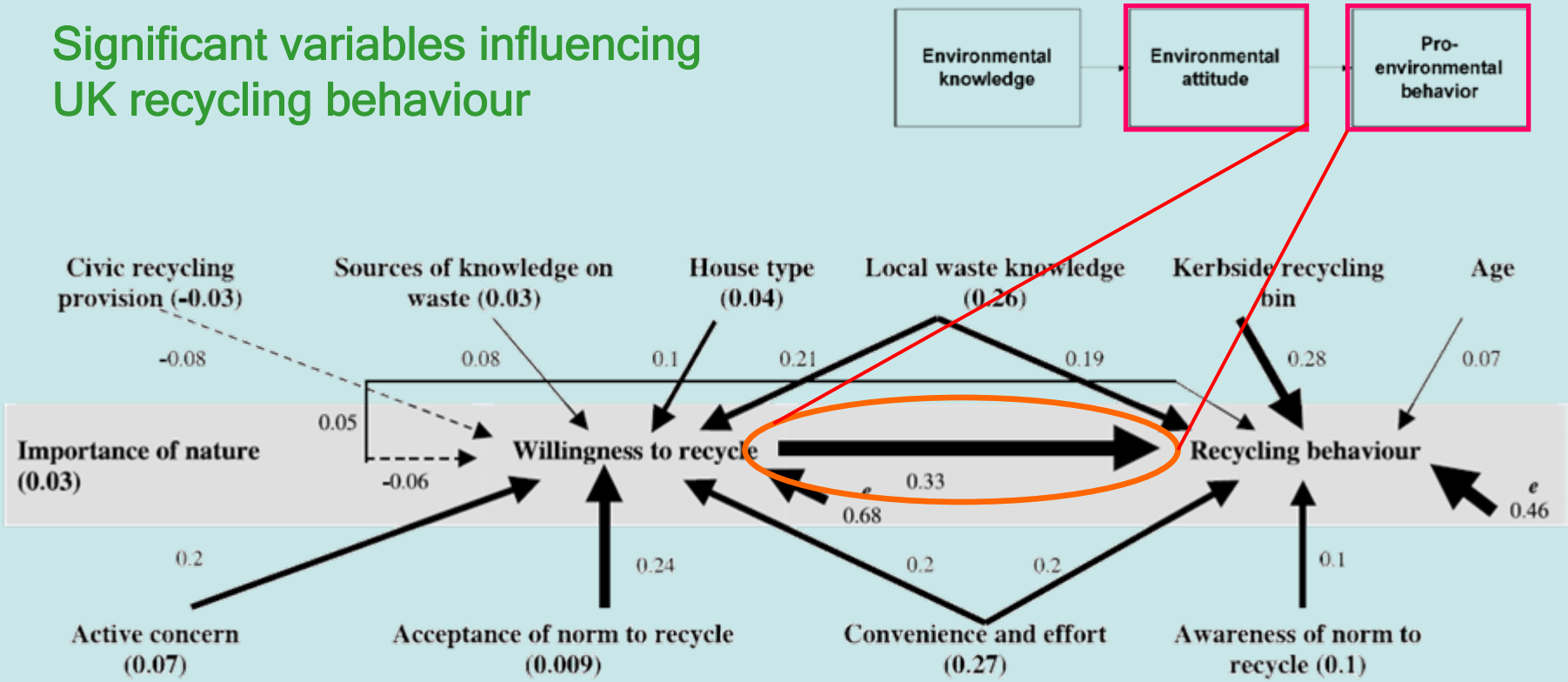
Source: DfT 2006

Attitude-action gap: empirical

Significant variables influencing UK recycling behaviour



Question raised: does the 'attitude-action' gap matter?

Implication for interventions → 'direct' or 'indirect'?

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Source: Barr 2003

Effective interventions

INTERVENTIONS

?

Attitude-Action Gap

- Vehicle Price
- Fuel consumption
- Size/Practicality
- Reliability
- Comfort/Safety
- Running costs
- Style/Appearance

Car purchase behaviour

- Depreciation
- Sales Package
- Dealership
- Environment
- Vehicle Emissions
- Road tax
- Alternative fuels

Source: DfT 2004

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Effective interventions

WEAK but NECESSARY

Provide environmental information

Raise concern

Increase VED differentials

"…concern for environmental impact of cars … does not often translate into behavioural change"
(DfT 2004)

Attitude-Action Gap

- Vehicle Price
- Fuel consumption
- Size/Practicality
- Reliability
- Comfort/Safety
- Running costs
- Style/Appearance

Car purchase behaviour

- Depreciation
- Sales Package
- Dealership
- Environment
- Vehicle Emissions
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- Alternative fuels

Source: DfT 2004

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Effective interventions

WEAK but NECESSARY

Increase conventional price signals

Promote 'mpg' information

"The average motorist underestimates their car costs by a factor of two"
(RAC 2004)

Attitude-Action Gap

- Vehicle Price
- Fuel consumption
- ~~Size/Practicality~~
- Reliability
- ~~Comfort/Safety~~
- Running costs
- ~~Style/Appearance~~

Car purchase behaviour

- Depreciation
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- Alternative fuels

Source: RAC 2004; DfT 2004

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Effective interventions

STRONG & EFFECTIVE

Company car tax:
Gradient ~£10/gCO_2-yr

Congestion Charge:
Increase cost elasticity
-0.7 → -1.0
(Santos 2006)

Attitude-Action Gap

- Vehicle Price
- Fuel consumption
- ~~Size/Practicality~~
- Reliability
- ~~Comfort/Safety~~
- Running costs
- ~~Style/Appearance~~

Car purchase behaviour

- Depreciation
- Sales Package
- Dealership
- Environment
- Vehicle Emissions
- Road tax
- Alternative fuels

Source: Ecolane 2006, Santos 2006

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Effective interventions

Increase transparency of cost-'mpg'-CO_2 link

VED differentials

Emissions-based Congestion Charge

CO2-based parking charges

Purchase feebates

Pay-as-you-drive

In car 'mpg' metering

Attitude-Action Gap

- Vehicle Price
- Fuel consumption
- ~~Size/Practicality~~
- Reliability
- ~~Comfort/Safety~~
- Running costs
- ~~Style/Appearance~~

Car purchase behaviour

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Effective interventions

Address personal & collective attitudinal barriers

- Habitual behaviour
- Social dilemmas
- Personal /social norms
- Perceived behavioural control
- Denial / cognitive dissonance
- Trust in others/govt.
- Values / Identity issues

Attitude-Action Gap

- Vehicle Price
- Fuel consumption
- ~~Size/Practicality~~
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Car purchase behaviour

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Community-based social marketing

Address personal & collective attitudinal barriers

- Habitual behaviour
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- Trust in others/govt.
- Values / Identity issues

- Community action
- User networks
- Viral marketing
- Personal contacts
- Champions & enthusiasts
- Media campaigns
- Opinion formers
- Co-production
- Deliberative fora

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Source: DEFRA 2005, McKenzie-Mohr 2006

Community-based social marketing

Address personal & collective attitudinal barriers

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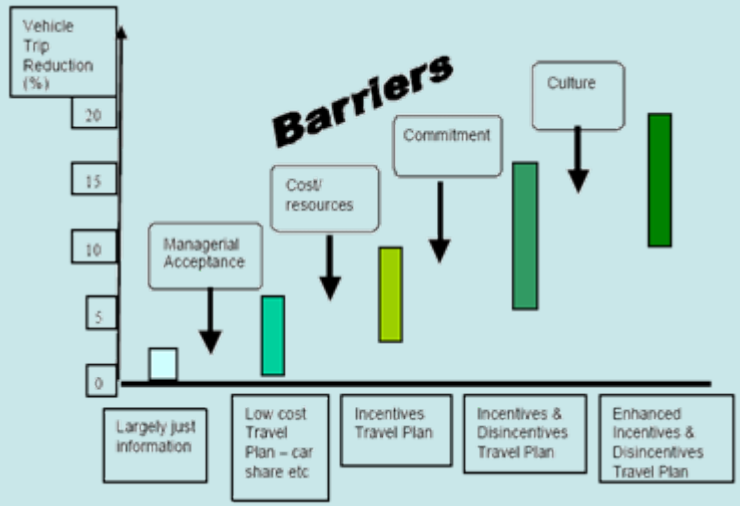
➢Travel Plans



- ✓Long-term change
- ✓Organisation/community focus
- ✓Require champion/ SM support
- ✓Aim for lifestyle change
- ✓Make change convenient

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Source: Potter et al. 2004, DEFRA 2005, McKenzie-Mohr 2006

Community-based social marketing

Address personal & collective attitudinal barriers

- Habitual behaviour
- Social dilemmas
- Personal /social norms
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- Denial / cognitive dissonance
- Trust in others/govt.
- Values / Identity issues

➢Car Clubs

✓Organisation/community focus
✓Change cost experience
✓Make change convenient
✓Mix incremental and radical
✓Socially inclusive

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Source: Carplus 2007, DEFRA 2005, McKenzie-Mohr 2006

Summary

- **Climate Change: concern high, knowledge patchy**
- **Attitude-action gap is very wide**
- **Providing information is not sufficient (0.1)**
- **Weak linking between attitudes → behaviour (0.3)**
- **Car-buying: environmental issues low priority**
- **Car-buying: 'mpg' not as useful as first appears**
- **Car-buying: habitual & affective factors significant**
- **Existing interventions good start but weak/blunt**
- **Need to make 'cost-mpg-CO2' more transparent**
- **Learn from community-based social marketing**

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