Information on Car Choice

Introduction

This record of evidence forms part of the work undertaken by UKERC's Technology and Policy Assessment team relating to its project on policy strategy for carbon emissions reduction in the passenger transport sector. The material was produced alongside the project's main report and since it supports that report, it was judged appropriate to make this material available to a wider audience. The main report itself '*What Policies are Effective at Reducing Carbon Emissions from Surface Passenger Transport*?', and the supporting evidence can be found at:

http://www.ukerc.ac.uk/ResearchProgrammes/TechnologyandPolicyAssessment/TPAProjects.aspx

Explanation of Content

Evidence on this policy measure has been collected by the TPA team on the basis that it has, or may have, the potential to result in carbon dioxide emissions reductions in the passenger transport sector. This evidence document begins with a summarised description of the policy measure. The evidence itself follows the summary and is presented in table form.

Each piece of evidence has been assigned a separate row and tabulated using four columns:

- Year of publication, arranged chronologically, beginning with the most recent year
- Name of author, including where applicable additional cited authors (and year); and a Reference ID number.
- Type of evidence:
  - Evidence containing quantitative information is denoted by the letter 'Q'
  - Qualitative evidence is denoted by the letter 'C' for 'comment'
- The evidence itself

The evidence was originally gathered and assessed using several sub-headings. The purpose of this was primarily internal i.e. to facilitate the handling of evidence and the production of the main report. These sub-headings have been retained here as follows:

- Policy Measures and Carbon Savings
- Other potential CO_2 Impacts i.e. outside of the immediate policy influence
- Other Benefits e.g. air quality improvement or traffic congestion reduction
- Policy Costs and/or Revenues i.e. to local or national government
- Business and Consumer Costs
- Unintended Consequences e.g. rebound effect
- Reasons/Arguments for Carbon Savings Achievement or Failure
- Policy Suitability for the UK

A list of references follows the evidence tables. Note that the Reference ID numbers are allocated by Reference Manager, the referencing software used by the TPA team.

Any charts, figures and tables referenced in the evidence are not reproduced here but can be found in the original publication or evidence material.

Where no relevant evidence was found for a particular sub-heading, this has been noted.

Policy Description

The evidence recorded here covers measures encouraging the provision of information to consumers in order to help them choose cars with lower CO_2 emissions e.g. point of sale labelling or booklets, advertising campaigns, web-based information etc.

Evidence Tables

Carbon Savings and Policy Measures

Year	Author	Type	Evidence
2007 2006	Anable & Bristow (ref 11297) citing CEC, 2007b Smokers (ref 11268) citing ADAC, 2005;	C	Smokers cites ADAC (2005) which concludes that in EU Member States "it is impossible to separate any shift in consumer behaviour resulting from increased awareness from the technical improvements in vehicles and associated fiscal instruments". This is also asserted by CEC (2007b), cited by Anable & Bristow (2007).
2006	Smokers (ref 11268)	C	Smokers provides evidence to argue that vehicle labelling has a role to play in increasing awareness, but this is only happening slowly, and has not yet contributed significantly to emissions reductions (Assessment of label introduced under Directive 1999/94).
2003	Kageson (ref 11175)	C	"The experience in Sweden and the UK, where CO2 labelling schemes and fuel consumption info in marketing have been in operation for around 20 years, is not promising. The power rating of new cars has increased faster in these countries than in any other Member State. Today Sweden has the heaviest, most fuel-consuming car fleet in Europe."
2000	Boardman (ref 11269) citing DETR, 2000a	Q	Average new car fuel consumption in the UK has been stable at about 7.6 litres per 100 kilometres since 1984 (citing DETR 2000a).
2000	Boardman (ref 11269) citing EVA, 1999 and citing Raimund 1999b	Q	Boardman (2000), citing Austrian Energy Agency – EVA (1999): a label giving particular information to potential car purchasers was estimated to reduce carbon dioxide emissions by 4-5%. When that label is accompanied by other instruments and strategies, it could be even more effective (citing Raimund 1999b).
2000	Boardman (ref 11269)	C	Boardman (2000) gives a summary of information schemes by country.
2000	Boardman (ref 11269)	Q	The Australian BTCE report cited by Boardman (2000) estimates that if implemented in 1996, a car labelling scheme would result in a cumulative reduction of about 3 million tonnes of CO2 equivalent emissions by 2015.
2000	Boardman (ref 11269)	Q	A comparison of fuel consumption, relative to other models of the same size, provides the most useful information to

Year	Author	Type	Evidence
			potential new car buyers. An overall estimate of the effect of a comparative design of label, would be a reduction in carbon dioxide emissions of some 2.7%.

Other CO2 Impacts

Year	Author	Type	Evidence
			No specific evidence found.

Other Benefits

Year	Author	Type	Evidence
			No specific evidence found.

Policy Costs and/or Revenues

Year	Author	Type	Evidence
2006	Smokers (ref 11268)	C	Most Member State reports did not indicate what the costs of the label were; instead they tended to focus on the cost of the guide, which was often the responsibility of the lead ministry.
2000	Boardman (ref 11269)	C	The Bureau of Transport and Communications Economics (BTCE) in Australia assessed the likely impact of a label on passenger cars using the star system in combination with the fuel guide. The report estimates that if implemented in 1996, a car labelling scheme would result in the Commonwealth Government losing about AU$154 million in petrol excise, while state and territory governments would lose about AU?$32 million in business franchise fees by 2015.

Business and Consumer Costs

Year	Author	Type	Evidence
2006	Smokers (ref 11268)	Q	Assessment of the costs of the label, made prior to its introduction: • €400,000 of material costs associated with the label and the poster, plus €2 million of personnel costs (NL). • €36,000 per manufacturer (UK).
2000	Boardman (ref 11269)	Q	The impacts of the Australian vehicle ‘star’ labelling system in combination with the fuel guide would result in an estimated fuel saving to Australian motorists who switch to more efficient cars of about $326 million between 1996 and 2015. The cost saving to an individual motorist over an average car’s lifetime would be about $1000 (citing BTCE in Australia).

Unintended Consequences

Year	Author	Type	Evidence
			No specific evidence found.

Reasons/Arguments for Carbon Reduction Achievement and/or Failure

Year	Author	Type	Evidence
			General
2007	Anable & Bristow (ref 11297) citing Noblet et al., 2006	C	Information may influence choice between vehicles but did not influence class choice (citing study in USA by Noblet et al., 2006).
2007	Anable & Bristow (ref 11297) citing SMMT, 2006b	Q	Of the 8 million cars sold annually, 75% of these are used vehicles for which there is no labelling scheme (citing SMMT 2006b).
2006	CEC (ref 11451)	C	The most promising options for improving the current legislation to enhance consumers' awareness about fuel efficiency and CO2 emissions lie with the introduction of energy efficiency classes on the label, and a further harmonisation of its design.
2006	Smokers (ref 11268)	C	Harmonisation between EU Member States is needed.
2005	CFIT (ref 11280)	C	Low carbon cars are already available on the market, but people are generally not choosing to buy them. Encouraging the development and manufacture of further niche vehicles which are low-carbon but only purchased by a small minority will not generate a mass move to low carbon cars across the market. Therefore, there is a need to understand consumer choice and encourage purchasing of these vehicles through measures such as consumer information and education campaigns [in combination with] tax incentives, purchase grants, car labelling and the development of mass market hybrid-electric cars.
2005	ADAC (ref 11559	C	Five EU Member States (Austria, Denmark, France, the Netherlands and Spain) have assessed the effectiveness of the EU label Directive 1999/94 in terms of reducing CO_2 emissions and concluded that while CO_2 emissions have declined since the label was introduced, it was not possible to separate out the effect of the label from reductions in emissions resulting from technical improvements by car manufacturers and fiscal measures.
2003	Wiel & McMahon (ref 11629)	C	Generally, the effectiveness of various types of energy labels may be influenced by how information is presented to the consumer, level of market support, and the credibility of the labelling program sponsor.
1999	Plotkin (ref 11409)	C	A significant reason why automakers and dealers are not providing customers with information or vehicle choices

Year	Author	Type	Evidence
			that provide clearer trade-offs is simply that the consumer is disinterested in improved fuel economy in the context of low fuel prices. Without a market change that boosts the value of fuel savings to the consumer, however, educational programs of this type are likely to have little benefit.
1999	Plotkin (ref 11409)	C	Vehicle manufacturers' accounting systems are sufficiently arcane that clear economic choices tied to actual cost differences would be difficult for the companies to provide even if they wanted to.
2000	Boardman (ref 11269)	C	Boardman (2000) recommends that further consideration be given to basing the energy efficiency index on CO2 emissions not fuel consumption.
			Consumer valuation of vehicle labels
2007	Lane (ref 11328)	C	Lane (2007) cites multiple sources suggesting the 'mpg paradox': that although mpg is reported by car buyers as a key decision factor, the reality is that little effort is made to compare fuel consumption data during the decision-making process. Reasons cited by Lane are: • Buyers assume similar 'mpg' for all cars within a class • Buyers have little confidence in published fuel economy data • Buyers believe that improving 'mpg' compromises performance and safety • 'Mpg' is more often a pre- and post-purchase priority • Costs are too complex to compute (mpg & p/litre -> p/mile) • Buyers Don't know what to do with 'mpg' figure
2006	Noblet et al. (ref 11576)	C	In a US study, (11576 Noblet et al. 2006) concluded that information may influence choice between vehicles but does not influence class choice.
2005	CFIT (ref 11280) citing MORI, 2003	Q	"Research by MORI for the DfT (MORI 2003 Assessing the Impact of the Graduated Vehicle Excise Duty research study conducted for the DfT) shows that nearly four in five car buyers did not look at the vehicle's emission rating before purchase…".
2005	Greene et al. (ref 11384) citing NRC 2002; citing German, 2002; citing Patterson, 2002; and citing Maples, 2003	Q	Surprisingly little is known about how consumers estimate the value of improved fuel economy and factor that information into their car-buying decisions. The following examples, however, strongly suggest that there is important market failure with respect to consumers' decision-making about fuel economy (all cited by Greene et al, 2005): • The NRC (2002) evaluation of the CAFÉ standards suggested that consumers may reckon only the first 3 years off fuel savings when considering the value of higher fuel economy. This would understate the true economic value off fuel savings over the typical 14- year life of a vehicle by about 60 percent. • Honda of America has reported market research indicating the average consumer counts only the first 50,000 miles of fuel savings (German, 2002). • A survey by the US Department of Energy found

Year	Author	Type	Evidence
			that on average consumers want to be paid back in 2.8 years for an investment in fuel economy (Patterson, 2002). • The US Energy Information's National Energy Modeling System (NEMS) used a 4-year payback with a 10 percent annual discount rate to estimate the value off fuel economy improvements to consumers until last year when they switched to a 3-year payback and 30 percent discount rate (Maples, 2003).
2005	Greene et al. (ref 11384) citing Greene, 1996	C	It could well be that the apparent undervaluing of fuel economy is a result of 'bounded rational behaviour'. Consumers may not find it worth the effort to fully investigate the costs and benefits of higher fuel economy (citing Greene, 1996).
1999	Plotkin (ref 11409)	C	The purchase of a car or light truck is a complex decision, with many of the crucial factors having virtually nothing to do with operating costs.
1999	Plotkin (ref 11409)	C	The annual fuel costs of the average light-duty vehicle are one-fifth or less of total operating costs, so that most consumers won't give a high priority to fuel efficiency trade-offs, even if they understand them.
2000	Boardman (ref 11269)	Q	Boardman (2000) surveyed consumers about the importance of different vehicle characteristics in purchase choice. See Table 6.2 for results. Fuel economy ranks number 6 from 15 suggesting that it is a fairly important characteristic for many individuals. Environmental impact comes in at number 10 – clearly this is a fairly low priority for most new car buyers.
			Consumer Awareness
2008	House of Commons EAC (ref 11511)	C	It is important that the relationship between labels and future running costs is explained to purchasers. For example the EAC argues that the Treasury should have taken greater care to explain that the new VED bands would apply to all vehicles registered on or after March 1st 2001. "If the point of green taxes is to change behaviour, they need to be properly publicised, so that people are fully aware of what they are being encouraged to do".
2008 2008	Anable et al. (ref 11522) EST (ref 11628)	Q	Recent research by (11522 Anable et al 2008) who discovered that only 3 out of 28 interviewees knew the CO2 emissions of their new vehicle within 10% accuracy, and 3 knew the correct VED band of their car. Similarly, (11628 EST 2008) found that nearly three-quarters of UK drivers (74%) did not know how much carbon dioxide their car emits.
2007	Anable & Bristow (ref 11297)	Q	A survey by the Low Carbon Vehicles Partnership over two consecutive years has revealed that the number of UK dealerships displaying the labels has increased from 74% in 2006 to 86% in 2007, with only 61% of dealerships meeting the target to have 75% of their cars displaying the correct label. Overall, 65% of cars were labelled, with performance cars being the most frequently labelled (71%) and small cars

Year	Author	Type	Evidence
			the least (60%).
2007	Anable & Bristow (ref 11297) citing SMMT, 2007	Q	Although 44% of car buyers were aware of the label, and 51% knew the band within which their car fell, the same survey found that just under 25% of showroom staff referred to the label without prompting. Staff knowledge of the label was variable but often limited, particularly on issues such as the link between fuel consumption and climate change (citing SMMT, 2007).
2007	Anable & Bristow (ref 11297) citing Ecolane, 2005	C	Research conducted by The Low Carbon Vehicle Partnership on consumer attitudes to low carbon cars (citing Ecolane, 2005) found that most car buyers are unaware of the lifetime cost savings of purchasing more fuel efficient, 'climate friendlier' cars. Properly trading off fuel savings versus changes in vehicle price involves trading off the time-discounted value of the fuel savings against the present cost of the vehicle – a calculation that many vehicle purchasers are not familiar with.
2000	Boardman (ref 11269)	Q	The relationship between global warming, CO2 and fuel consumption is not generally recognised [by potential car purchasers] - out of three multiple choice questions which aimed to test this knowledge 40% did not get any right and a further 40% only got one right. Therefore it is unlikely that the inclusion of absolute statements of CO2 emissions on the label will be salient to many.
1999	Plotkin (ref 11409)	C	Vehicle purchasers are rarely given explicit choices in efficiency coupled with corresponding explicit price differences. Instead, efficiency differences are buried in base prices or in the price of complete subsystems such as engines, and efficiency differences are always coupled with differences in other attributes such as acceleration, level of luxury etc.
1999	EVA (ref 11577)	Q	According to surveys, 70 – 80 percent of respondents said they would change their car purchase if a point of sale label indicated the car that they were interested was "very inefficient" compared to other cars of the same size.
			Marketing
2008; 2007	Murray (ref 11632) FoE (ref 11631)	Q	A survey by FoE found that 55% of car adverts in national newspapers (over a 2 week period) were for cars in the most polluting VED bands E to G (>165gCO2/km), representing 37% of registrations in the UK. A more recent survey by the LowCVP found, however, that advertising expenditure on cars in VED bands A, B and C are on an upward trend Murray (2008).
2008; 2008	Anable et al (ref 11522): EST (ref 1111628	C	Anable et al (2008) and EST (2008) suggest that to maximise effectiveness, any label needs to be 'dynamic' to reflect changing fuel price and concentrate on running costs that mean something to buyers (for example range on a tank of fuel costing a given amount) – and it should have comparative best in class information. The same analysts point out that new car labelling does not apply to second hand cars and these make up 75% of cars sold.

Year	Author	Type	Evidence
2008; 2008	Murray (ref 11632) Dings (ref 11630)		Some commentators go as far as suggesting an outright ban on advertising. Nevertheless, the Low CVP believe that there is a risk that overly strict regulation will suppress the use of environmental performance as a selling point or channel activity into unregulated media (Murray 2008). A compromise may be the banning of ads for cars that emit more than 50% over the fleet average (Dings 2008).
2007	Retallack (ref 11633)	C	Some commentators have recommended that car adverts must carry bold and visible warnings about the contribution of driving to climate change making the parallel with smoking where 'Research has shown that the larger a health warning is the more impact it has on persuading a smoker to give up: labels that occupy 30% or more of each of the largest sides on the cigarette pack have been found to be strongly linked with structured decisions to quit or to cut down their smoking'.
2007	Reuters (ref 11634)	C	In Norway a code of conduct introduced for car advertisements was put in place from October 2007. The guidelines distributed to carmakers said 'we ask that...phrases such as 'environmentally friendly', 'green', 'clean', 'environmental car', 'neutral' or similar descriptions not to be used while marketing cars'. Manufacturers would risk fines if they failed to drop the words from the car adverts.
2007	CEC (ref 11259)	C	"In addition to consumer information, the way in which cars are marketed may also need to be adapted, so as to focus less on the dynamic performances of vehicles. To guarantee a level playing field, there is a need for coordinated action amongst the industry. Car manufacturers should consider adoption a voluntary agreement on an EU wide code of good practice regarding car marketing and advertising aimed at the promotion of sustainable consumption patterns."
2006	Smokers (ref 11268)	C	Manufacturers' marketing strategies "are often at odds with, and overshadowing, the message that the label is projecting". As the car advertising budgets far exceed the label budgets, it is arguable that more attention needs to be given to influencing the manufacturer's message. This could take the form of a code of conduct for advertising e.g. extension of current rules in Directive 1999/94 from point of sale to all media.
2000	Wright & Egan (ref 11637)	C	Marketing of cars by vehicle manufacturers is an important driver of consumer attitudes to various vehicle attributes.

Policy suitability for UK

Year	Author	Type	Evidence
2008	Dings (ref 11630)	C	Some analysts suggest that policy could pay more attention to the manufacturers' messages on car advertising. In fact, the EU Labelling Directive does put some structures in place "This (C02 and fuel consumption) information should, as a minimum, be easy to read and no less prominent than the

Year	Author	Type	Evidence
2008	King (ref 11335)		main part of the information provided in the promotional literature". Existing UK regulation requires that information on CO2 emissions and fuel economy is given equal prominence to other information on vehicle specification, performance or price in advertisements. However, surveys have revealed that this information is often very difficult to find on any advertising media, if it is there at all. In addition, until recently, the regulation did not extend to some of the more popular 'graphical' media such as the internet, bill boards and cinema advertising.
2008	LowCVP (ref 11578)	C	In June 2008 the Department for Transport changed its guidance on car advertising following a review of its recommendations on CO2 emissions in promotional information. Car adverts on billboards and in magazines must now have CO2 emissions prominently displayed.
2007	CEC (11635)	C	The European Parliament has backed stronger regulation of vehicle advertising, supporting a proposal that 20 per cent of advertising space should be devoted to information on CO_2 emissions and there are opportunities for changes as the EU CO_2 labelling directive is up for review.
2007	Kahn (ref 11336) citing OECD, 2004a	C	Provision of information and use of communication strategies and educational techniques, considered to be soft measures (citing OECD, 2004a) can be used for supporting the promotion of less politically acceptable hard measures.
2006	Smokers (ref 11268) citing VROM, 2003 from ADAC, 2005	Q	In the Netherlands, the CO2 rating of the car as shown on the label was also used as the basis for differentiated registration taxes. (New passenger cars with either an A- or a B-rating will receive a tax reduction – of €1,000 and €500, respectively – while the tax for new passenger cars rated D to G will increase by up to €500. This is similar to a system introduced in 2002 whereby there was a tax rebate for A- and B-rated cars of the same amount, which led to a significant increase in the purchase of such vehicles) (citingVROM 2003 reported in ADAC 2005).

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