
Chapter 8. Transport – Connectivity

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Section 8.1. Sustainable Transport?

8.1.1. Connectivity

Connectivity between people, places and products is an essential part of any society. In Western countries today, most economic activity is inconceivable without transport, telephones, or computers, while personal mobility has been the dream used to sell motor cars since mass production began in the 1950s.

Sadly, the days of carefree motoring on the open road are gone. With around 33 million cars on British roads today, congestion is an all-too-familiar blight, costing the economy around £15 billion a year. The average UK citizen spends 235 hours in a car every year, driving further and more frequently than ever before²⁷⁹.

Many daily journeys – to school, to work or the shops – are borne of unwelcome necessity rather than an active desire to drive. Car-dependency is exacerbated by unsustainable land use planning practices that create dormitory suburbs and out-of-town retail parks – a pattern of dispersed development which is in turn harder to connect by bus, rail, or cycle. Similarly, rapid growth in aviation demand threatens to create air-dependent lifestyles that are highly carbon-intensive.

Transport is a major contributor to global warming, with road transport accounting for 24 per cent of the UK's carbon emissions, a figure set to grow in absolute terms and relative to other parts of the economy. At around 5 per cent of the UK total²⁸⁰, aviation emissions start from a relatively low base but are growing at the fastest rate of any sector. If this trend continues unchecked, aviation alone will be responsible for at least one third of the UK's total emissions by 2050. These statistics raise important questions for equity and policy – are large increases in transport emissions really justified at a time when other sectors are planning carbon cuts?

We aim to present positive ways forward for transport and propose policies which decouple connectivity and economic growth from gridlock and climate change. We start by taking the debate back to first principles – why people travel, where they travel and how.

8.1.2. Why travel?

Travel is a means to an end, used to connect work, leisure, family, shops and communities. Increasingly, connections can be made without leaving the home or office at all. Telecoms and computers are stretching the concept of travel far beyond the bounds of physical transport. Millions of virtual journeys take place over the Internet every second, as people communicate between international time zones and goods are bought or sold.

Even when people do travel between places, they rarely need to do so by any specific mode but expect the freedom to choose that which is most convenient for that journey and its purpose. They expect their journey to have certain attributes – to be reliable, predictable, safe and comfortable. These are not the exclusive properties of any one transport mode. A cycle may provide the most predictable journey time in rush hour, while a bus removes worries about parking at a journey's end. There is often no reasonable alternative to the car. It is significant, however, that in central London, many are happy not to own a car, even though they could afford one. The inconvenience and cost of on-street parking, poor journey times compared with public transport, and the availability of car clubs and conventional car hire when required make that a perfectly sustainable choice. There is clear evidence that if people can

²⁷⁹ DfT (2006) Transport Trends

²⁸⁰ Includes emissions from UK domestic flights and international departures

link the components which make up their lives without using a car they are increasingly happy to do so.

We believe that a Conservative government should seek to offer a genuine choice of transport more widely, whether by air, car, public transport, cycling or walking or virtual travel through telecoms. We envisage a transport system in which, wherever practicable, lower carbon modes become the first choice. This means that we have to challenge the ascendancy of the motor car, which continues to dominate much of the transport policy, planning and funding practised in Britain today.

Although removing bottlenecks may make sense, grandiose programmes of road-building are part of the problem, not the solution. After buying short-term relief from congestion at tremendous cost, they induce more traffic. We advocate instead more balanced policies that provide opportunities for choice and modal shift. We argue that government should prioritise low cost interventions with high returns such as work and school travel plans, offering carbon, congestion, and time savings. Investment in sustainable transport is money well spent.

Intelligent land-use planning can make alternatives to the private car more appealing, as well as reducing the number and length of journeys overall. Sustainable land-use means planning for mixed use development that clusters jobs, homes and shops nearby, and investing in attractive community areas that engender a sense of community identity and pride.

However, integrated transport systems and sustainable land-use planning will not of themselves induce a reduction of transport emissions on the scale required. The government must be prepared to use fiscal measures to signal to the passenger, business, and freight communities that choosing lower carbon transport makes financial sense. Environmental tax reform is a sensible framework for delivering demand management – the principle of taxing more of the carbon people burn, and less of what they earn.

‘Less of what you earn, more of what you burn’

Environmental tax reform (ETR) represents an efficient and equitable framework for reducing carbon emissions from transport and other parts of the economy. The principle is simple: the tax base is shifted from value-adding activities such as employment towards value-subtracting activities such as pollution.

Several caveats apply to our proposals for ETR in transport. Changes in the tax base must be phased in gradually in order to allow adaptation to take place. Tax shift should be revenue neutral overall – this is not about adding taxes but replacing taxes. We should tax more of what people burn, and less of what they earn. Increasing the cost of carbon-intensive transport should be matched by cutting tax elsewhere. These cuts should be found among taxes on employment or the cost of living, not within the transport world itself. Polluting transport has to become more highly taxed if the necessary cuts in its carbon emissions are to be achieved. Thus the idea that national road-user charging can be offset by reductions in other car taxes and still deliver substantial carbon benefits has to be treated with scepticism. Tax cuts have to be made elsewhere.

Hypothecation

It is sensible to discourage journeys which are highly polluting, but it has to be recognised that this will inevitably increase demand for travel by cleaner modes. Consumers need satisfactory alternatives if they are to avoid unnecessary flights or car journeys. Some of the non-tax revenue raised by discouraging motoring or aviation in ensuring that those alternatives are available is appropriate, and offers the general public visibility and transparency over how their money is spent. Hypothecation may not be universally suitable as a means of funding, but in transport there is a strong case for the principle to be applied.

Technology can help significantly in the battle against pollution and policies that promote sustainable transport can stimulate research and innovation. Car-makers can be encouraged to make much cleaner

vehicles and the public can be offered incentives to buy them; intelligent ticketing and timetabling can make it easier to plan journeys by public transport; improving logistics can offer significant fuel savings for freight operators and airlines.

However technology can only go so far. There is limited ability to improve aircraft efficiency in the short-term; biofuels raise sustainability and carbon problems of their own; and the sheer increase in the number of cars can cancel out the improvements in fuel economy. Exclusive dependence on technology-based solutions will therefore not deliver the emission reductions we need. Managing demand for private motoring and aviation has to be part of the solution.

The package of policies recommended in this Chapter offer a means of reclaiming the benefits of mobility while reducing the costs. The benefits of a more sustainable transport system – environmental protection, higher productivity and healthy local communities – will be enjoyed by everyone.

Section 8.2. Sustainable Transport through Land-Use Planning

8.2.1. Overview and objectives

Transport exists only in the context of land-use planning. The transport system has little intrinsic value – for most people, it exists solely as a means of connecting locations associated with work, leisure, family, community and shopping, as Figure.8.1. demonstrates. The spatial distribution of homes, schools, services and jobs determines how far and how frequently people travel, and strongly influences their choice of transport mode.

Figure 8.1. Trips made per person in 2005, by purpose and distance²⁸¹

Trip purpose	No. of trips per person	Average trip length (miles)
Commuting	161	8.7
Business	37	19.4
Education	66	3.2
Education escort	48	2.0
Shopping	206	4.3
Other escort	97	5.1
Personal business	109	4.8
Visiting friends	170	8.5
Entertainment	52	7.6
Participative sport	17	6.0
Holidays and day trips	39	23.5
Other	42	1.1
Total	1,044	6.9

Source: DfT (2006)

It follows that land-use planning has a fundamental bearing on whether sustainable transport patterns arise in a community or not. Good quality planning can reduce carbon emissions by reducing the total number and distance of journeys, and allowing as many trips as possible to be completed by alternatives to the private car.

Higher density, mixed-use development and walkable neighbourhoods confer social benefits in the form of community cohesion, more opportunities for enjoying green or open space, and better access to goods and services for non-car-owning groups including the elderly and poor. Economic benefits include reduction in travel times, a renaissance for local business and less congestion.

Unfortunately, large swathes of residential and commercial property were developed with no such considerations in mind, pre-dating the recognition of climate change and congestion as serious threats. Whole cities have been designed around car use, while terms such as ‘dormitory towns’, ‘suburbanisation’ and ‘out-of-town retail parks’ are bywords for unattractive, roundabout-dotted landscapes designed to divide instead of bringing people together. These are severed communities.

Of course, many more British villages, towns and cities date back to a time before mass car ownership, when services and jobs were necessarily clustered in the local area. Every opportunity should be taken to restore and improve connectivity within settled communities, whether they are historic market towns or new housing estates. This requires planning departments to think about the travel landscape as a whole, and particularly how the location of healthcare, education, retail and employment affects transport demand. Frequently, this may involve a step back from the trend for centralisation in favour of local provision.

²⁸¹ DfT (2006) Transport Statistics Bulletin: National Travel Survey 2005

Given the all-too-visible hazards of car-dependency, it is important to ask why poor planning persists, even when building communities from scratch. Too often, substantial new developments fail to incorporate social infrastructure such as places for recreation and worship, doctors' surgeries or local shops. Failure to provide such facilities stifles community relations and encourages car use even for simple visits to the 'local' shop. .

Case studies such as the town of Houten, near Utrecht in the Netherlands show that with good planning, communities can be genuinely sustainable and attractive at much lower levels of car use than obtain in the UK. Although existing policy aspires to sustainable planning, implementation remains a far greater challenge. Governance, funding, inertia and management all constitute barriers to delivery, although the lessons of best practice are starting to take hold. Systemic change is a story of incremental improvement rather than quick wins; institutional learning rather than major restructuring. The challenge for the next government is to design workable sustainable land-use policy for the long-term.

8.2.2. Connectivity without transport

Transport is all about connectivity, but many elements of everyday life can be connected without transport. IT technologies have taken the travel out of many connections and are a routine choice for business and personal discussions, shopping and entertainment. Home shopping, for example, is expected to account for 11% of total food retail sales by 2010, and the proportion of adults buying goods over the Internet more than doubled to 25% between 2000 and 2003.²⁸²

However, travel-replacing technologies are still poorly integrated with core transport strategy. Placing greater emphasis upon connectivity could encourage the take-up of innovative ways of reducing the need to travel, such as the 'smarter choices' described in Section 8.3. The Internet has not yet revolutionised working patterns on the scale originally envisaged. But it is fair to assume that improvements in web technologies, tele- and video-conferencing will increasingly lead employers to recognise the potential of home working. Not all staff can work at home; but having all those staff who can do so work one day a week at home would reduce office rental and running costs, while the resultant 20% reduction in employee journeys would help mitigate traffic congestion.

It is time to reconnect ministerial responsibility for transport, environment and planning, through the restructuring of central government departments. **For this reason the proposed new Department for Sustainable Growth would incorporate a single Directorate under a Minister of State that would bring together the current responsibilities of the DfT and land-use strategy from Defra/DCLG. The new Directorate should also take over telecoms policy from DBERR in order to bring together transport and telecoms policy, recognising that communications technology offers connectivity in the same way as physical travel.**

8.2.3. Local transport planning and funding

The majority of transport planning takes place at local level. The Local Transport Plan framework was introduced in 2000, and has resulted in significantly increased investment in local transport projects, totalling £8 billion in the five years to 2005.²⁸³ The LTP system aims to promote more strategic, joined-up approaches to transport provision.

²⁸² DfT (2005) Smarter Choices - Changing the Way We Travel
<http://www.dft.gov.uk/pgr/sustainable/smarterchoices/ctwwt/>

²⁸³ House of Commons Transport Committee (2006) Local Transport Planning and Funding

Although LTPs offer a sensible framework, most local authorities are not performing well enough on congestion, public transport use, or cycling. Improving performance in these areas generally requires implementing demand management measures that are difficult to contemplate for political or practical reasons.

Problems with delivering sustainable transport through local planning can be separated into a ‘bottom-up’ category regarding local authority delivery and ‘top-down’ issues relating to central government policy.

In the bottom-up category, projects to reduce car use or promote modal shift are held back by factors including lack of political will, poor sharing of best practice and shortage of appropriately skilled staff.²⁸⁴

Of course, the overall travel landscape is shaped by decisions in health, education housing, and land-use planning more than by highways engineers or other transport planners. The number of parking spaces associated with new business or services development, for instance, is an important determinant of whether people drive to work or consider another mode.

The balance of capital to revenue funding presents a further barrier. Capital to pay for new infrastructure, such as bus stands, is easier to find than revenue to maintain transport services. Revenue funding shortages also limit implementation of ‘smarter choices’ – measures such as travel plans (see Section 8.3.) which offer excellent value for money, but imply an ongoing commitment of staff time that falls foul of current financing and management structures.

Further, revenue funding that local authorities receive from central government is rarely earmarked for transport, which may lose out to other priorities like health and education services. Increasing the political priority accorded to transport may, however, help push up its share of revenue support and is preferable to ring-fencing budgets. *We would therefore encourage an increased availability of revenue funding associated with maintaining public transport and other lower carbon travel options. In conjunction with the institutions for transport professionals, we believe that local government should aim to broaden the skills set within local transport planning departments, developing capacity for delivering ‘soft modes’, and demand management to complement traditional technical and engineering schemes.* This would be achieved both in by changes in the initial training curriculum and in in-service training.

We believe that strategic decision-making in major conurbations can be improved through reforms to the PTE/PTA structure, as envisaged by the Road Transport Bill.

We also believe that parking spaces provided by employers could be brought into the tax system by way of an additional charge to occupiers of commercial premises with off-street parking to at least reflect the open-market cost of parking in the area concerned.

Turning to top-down policy, central government currently shows unwillingness to invest political capital in reducing transport emissions. There is a perception that government has put demand management measures into the ‘too difficult’ box, while DfT targets have little bearing on wider government targets on climate change.

Sustainable transport practitioners feel that central government lays too much emphasis upon installing infrastructure measures (for example, a cycle lane) and too little upon actual outcomes (for example, how many journeys are made on that cycle lane). The lack of an outcome-based approach is also felt in areas outside the LTP, for instance in the travel plans required for new development under PPG13.

²⁸⁴ Atkins (2005) *Long Term Process and Impact Evaluation of the LTP Policy*, Department for Transport

Many travel plans are currently expensive failures, as developers invest in bus services or cycle sheds but not in encouraging and enabling people to use them.²⁸⁵

Local authorities identify the frequent changes to the assessment framework for LTPs and poor policy integration between government departments as serious difficulties in ensuring a local integrated transport policy.

The question of linking local transport funding to performance against sustainability targets is contentious. The many differences between local authority areas – in existing travel patterns, inherited land-use planning, leave alone the demographics – have been felt to render any target regime unfair and impractical. Achievement of minimum sustainability standards should be a pre-requisite for new developments; but the majority of transport issues are bound to be decided piecemeal at local authority level. Projects to revitalise a town centre, deal with an accident blackspot, or unblock a congested road are often individually and separately considered. The LTP framework is designed to bring ‘big picture’ thinking to these scattered developments, and should be applied whenever any relevant decision is made to ensure that local authorities have robust plans for emissions reduction and for the achievement of other sustainability aims such as modal shift.

Major new developments should be approved only once they meet minimum transport sustainability criteria on modal split between smarter choices, walking, cycling, public transport and car use. This assessment should be made after a full carbon audit.

Central government guidance and targets should place at least equal emphasis upon reducing transport emissions as upon alleviating congestion. We propose therefore that, as a condition of funding, LTPs should be required to demonstrate clear, achievable reductions in the carbon intensity of local transport.

Central and local government should also move to outcomes-based performance monitoring that emphasises service delivery rather than just infrastructure provision.

8.2.4. National and regional transport infrastructure

The UK is the only nation in the EU with such marked difference in economic performance between its capital and other major cities. This is not the place to repeat the debate over the balance of development between the South East and other parts of the country. Suffice to say, transport is a key enabler of economic growth, and there are strong arguments for using infrastructure investment on inter-urban routes to spread the benefit and burden of growth.

The Eddington review was correct to say that transport “cannot of itself create growth”.²⁸⁶ No amount of expensive infrastructure will create jobs if the fundamentals of trained workforce, viable product, and market-place are not also in evidence. On the other hand, neither is it sensible to wait until growth overtakes transport provision. The Docklands Highway and the Jubilee Line extension are examples of major transport infrastructure that was retrofitted too late and at enormous extra cost because they were not planned into the original development. The lesson is to ensure that whenever new growth is contemplated, proper account is taken of the traffic implications at the outset. That might involve a new access road, a rail spur or a guided bus route, with the cost factored into Section 106 negotiations with developers.

Eddington’s position that incremental improvements are preferable to major new schemes also merits a nuanced reply. While infrastructure investment should always strive to be cost-effective, the final

²⁸⁵ Association of Commuter Transport (2006), evidence to Quality of Life Transport Working Group

²⁸⁶ HM Treasury (2006) The Eddington Transport Study

choice of transport options should be made with reference to wider social and environmental goals. Although Eddington argues against building new high speed rail links, this investment may be justified if it provides an alternative to highly polluting domestic flights and where poor accessibility is currently a limiting factor to the growth of regional economies.

The case for major new infrastructure is not helped by the delays, cost escalations and uncertainty that have plagued many schemes in recent years. The Thameslink 2000 scheme, for instance, has required over 30 consents under four different Acts and has taken over eight years, and it is still not yet complete.²⁸⁷ White Papers, PPGs and other central policy guidance are not providing the necessary clarity for developers or planners. There is a need to define a more intelligent approach – one that preserves democratic consultation but provides for more certainty of outcomes, thus saving time and costs.

Spatial development strategies at the national and regional level are one such solution, which could be used to establish priorities for sustainable travel patterns and relate transport to other infrastructure including housing, health, jobs and education.

The guiding principle of these strategies should be the need to decouple economic growth from transport emissions. They would emphasise managing demand for car use through sustainable land-use planning and modal shift, eschewing predict and provide approaches to road and airport capacity.

These spatial strategies would be qualitatively different from the proposals contained in the government's recent planning white paper, which threatens to lock the nation into the development of carbon-intensive transport infrastructure for years to come. Purely economic considerations must not be allowed to drive development strategy, which must instead give due emphasis to environmental interests.

We therefore propose that an incoming Conservative government develop strategic spatial plans, nationally and for the regions, which emphasise sustainability and relate transport provision to housing and other infrastructure. Central government should set an example on this necessary rebalancing of national economic growth. Firstly it should encourage the use of technologies that make high-quality communications possible without travel and be seen to be making those choices itself. State of the art tele-conferencing is now extremely effective and user-friendly, yet it is hardly used by government departments. It should become the norm. This would be particularly important as it is also our view that the second means of government leading the field would be by the proper relocation of the whole of significant central departments outside London. In this way, we would begin to build up natural centres for particular activities outside London and make it more likely that private companies would choose to put their headquarters outside the capital.

8.2.5. Road building

As traffic levels continue their seemingly inexorable rise and politicians come under pressure to 'do something', this often means following the route of least resistance – building new road capacity. There are, indeed, some cases in which road-building is justified. We believe there is a value in relieving rural towns and villages of the intolerable burden of noise, congestion and accidents associated with inappropriate traffic volumes.

Similarly, there is a case for removing acute blockages on the network through the use of grade-separated junctions, or other improvements to traffic flow that ease standing pollution.

²⁸⁷ HM Treasury (2006) The Eddington Transport Study

It is important that the cure should not be worse than the disease. In some cases there will not be a suitable by-pass option available. But if the surrounding landscape is not protected by a National Park, Area of Outstanding Natural Beauty or other designation, the construction of rural bypasses and/or the removal of bottlenecks through dualling should be considered provided the scheme meets a number of criteria.

Most importantly, there must be a workable strategy for locking in the benefits of traffic reduction, such as restricting traffic movement through town centres. Without preventative action, new roads quickly fill up with new traffic as they encourage people to change routes, drive more frequently, or take road journeys that they would have avoided before. For instance, traffic volumes on the Newbury bypass, opened in 1998, were already 22% above the forecast level for 2010 by 2004.²⁸⁸ Peak-time congestion within the town is back to levels that prompted the building of the by-pass in the first place.

Road-building should, however, be the exception rather than the norm. The truth about major new schemes, as every transport minister knows, is that expanding road capacity to accommodate more cars simply generates more traffic. This has led a succession of ministers to condemn the ‘predict and provide’ approach, and declare that “simply building more roads” is no longer acceptable.²⁸⁹

A key to the mechanism for assessing major road schemes is the cost/benefit analysis prepared by the Department for Transport. The methodology adopted in this respect, and the values placed on such items as the (relatively high) cost of car traveller time as against the (relatively low) cost of disturbance to wildlife and the environment are the cause of considerable disquiet among transport academics. *There is a strong case for a comprehensive review of the cost benefit analysis regime adopted by an incoming Conservative government which will have profound implications for major road schemes in the future. We also recommend a moratorium on all plans for motorway and trunk road widening pending such a review and the wider consideration of the issues outlined in this Report.*²⁹⁰

Given the very high costs and doubtful benefits of motorway widening schemes in particular, there is a strong argument for putting such schemes on hold.²⁹¹ Transport spending should be refocused upon measures that reduce climate change impacts, with some money put aside specifically for this purpose through the type of Carbon Reduction Fund proposed by environmental groups.²⁹²

An incoming Conservative government should not duck the challenge of managing demand for car use. The policies outlined here for land-use planning, integrated transport and fiscal incentives offer a framework for developing sustainable alternatives. If implemented, this would remove much of the perceived need for new road capacity, and finally move the UK beyond predict and provide.

We would further propose that the balance of transport spending is weighted towards sustainable schemes that reduce carbon intensity, and the creation of a new Carbon Reduction Fund to support measures designed to reduce emissions.

²⁸⁸ CPRE and Countryside Agency (2006) Beyond Transport Infrastructure – Lessons for the Future from Recent Roads Projects

²⁸⁹ Ladyman, S. (2006) Speech to Energy Saving Trust

<http://www.dft.gov.uk/press/speechesstatements/speeches/socialandenvironmentalimpact5885>

²⁹⁰ Leake, J. (9th August 2007) *The Road Fix*, New Statesman <http://www.newstatesman.com/200708090012>

²⁹¹ House of Commons Transport Committee (2006) The Work of the DfT’s Agencies

<http://www.publications.parliament.uk/pa/cm200506/cmselect/cmtran/907/907.pdf>

²⁹² Transport 2000 and FoE (2007) Climate must be central to transport spending, say green groups. Press release

Outcomes-based road safety regulation

The DfT is one of the most prolific regulators in the country, particularly on issues related to safety. While protecting the public is of paramount importance, in many cases regulation is unnecessarily prescriptive and unhelpful. Examples where regulation might sensibly be relaxed include allowing more informative road signage similar to that found on French autoroutes, promoting nearby attractions of benefit to the local economy. Deregulation of motorway service areas started by the Conservative government could also be continued, enabling independent or local operators to enter the market and improving consumer choice.

The overzealous interpretation of road signs regulation has led to a proliferation of signs that are aesthetically unappealing and can actually reduce road safety through distracting visual clutter. The Streetscape and Highways Design Bill, tabled by Shadow Trade and Industry Secretary Alan Duncan MP, would require highways authorities to ensure signs do not cause unnecessary visual intrusion, while still providing appropriate information. We believe that this should form the basis of amending legislation. We also propose pilot schemes to see how far rural road safety is improved by the increasing use of road marking and additional signs. Experiments elsewhere have suggested that motorists drive more carefully where there is no white lining and only exiguous signing. Proper science would enable more effective decision making.

New research suggests that the assumption that lighting roads is an aid to safety is not necessarily valid in all cases. Such lighting is very carbon intensive and polluting. Government should review all road lighting with a view to significant reduction. That review should include an assessment of the need for the recent intensification of lighting on masts at the behest of the Civil Aviation Authority. Again, there appears to have been no serious research behind recent diktats from international aviation bodies. **An incoming Conservative government should plan to replace such road lighting as remains with modern low energy directional lighting which reduces both energy use and light pollution. Similarly it should act on the evidence of its review of the lighting of masts to ensure that it is the minimum necessary to ensure safety. Light pollution is a real concern, even apart from its carbon cost, and transport's contribution to it is significant.**

Land-use planning based upon the presumption of increasing car use has given rise to a range of problems. Besides increasing carbon emissions, car-based development creates extra traffic and causes accessibility problems for non car-owners, as well as undermining local economies and communities. Although these problems are highly visible and well understood, unsustainable land-use planning persists. This is partly a matter of habit, partly institutional, and partly conscious choice.

Reforms are therefore needed to improve the governance of transport planning and delivery, and crucially to strengthen linkages with decision makers responsible for the provision of housing, employment, retail outlets and public services – ultimately these are the destinations that generate the need to travel. Every opportunity should be taken to evolve more sustainable travel landscapes, with a stronger priority for walking, cycling and public transport at all stages of planning.

Section 8.3. The Integrated Transport Hierarchy

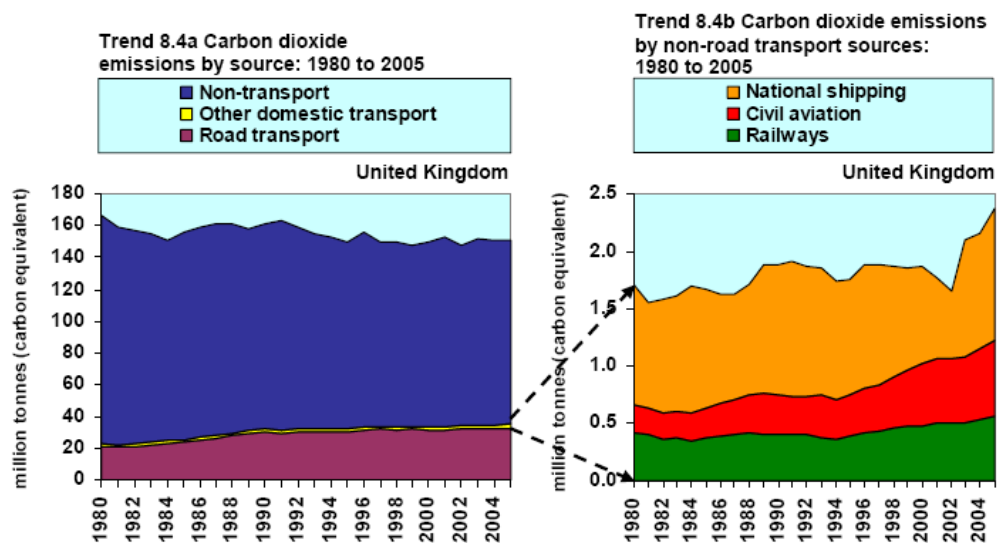
8.3.1. Overview and objectives

Travelling is a significant part of everyday life. The average distance travelled per person each year has increased by about 60% in the last three decades to 7,200 miles.²⁹³ The length of an average trip has risen to around seven miles, partly because of scattered development patterns discussed in Section 8.2, which force people to travel further to connect work, leisure, family and shopping.

While it is true that people travel further and more frequently than before, the large majority of trips are short-distance. Of the average 1,044 trips made per person per year in 2005, 40% were less than two miles in length, and 95% were less than 25 miles. The car is the most common mode for all but the shortest trips of under one mile.

The dominance of the private car is worrying from an environmental perspective. Over medium distances, cars produce around four times as much CO₂ as buses or train, and are second only to aviation in terms of carbon intensity.²⁹⁴ In all, road transport is responsible for 24% of the UK's total carbon emissions and that proportion is rising. Figure 8.2. indicates how total annual emissions break down by transport modes.

Figure 8.2. Carbon dioxide emissions from transport



Source: AEA Energy and Environment (formerly netcen)

Source: DfT (2007)²⁹⁵

Journey lengths and vehicle efficiency both have an important bearing on transport emissions, and are discussed in Sections 8.2 and 8.4 of this Chapter respectively. This Chapter focuses upon policies for boosting the share of journeys made by alternatives to the car – walking, cycling, buses and trains – as well as considering the potential of so-called ‘smarter choices’ such as travel plans, flexible working and teleconferencing.

²⁹³ DfT (2006) Transport Statistics Bulletin: National Travel Survey 2005

²⁹⁴ CE Delft (2003) To Shift or Not to Shift

http://www.ce.nl/eng/pdf/03_4360_09.pdf

²⁹⁵ DfT (2007) Transport Trends

http://www.dft.gov.uk/162259/162469/190425/Trends_2006_FINAL_v5.pdf

Figure 8.3. shows changes in trip numbers by various modes. The car remains by far the most popular mode, while trips by local bus outside London, by cycle and on foot have declined. However, a number of local authorities have managed to buck this national trend, using investment, demand management, marketing and other incentives to boost patronage of public transport, or increase walking and cycling.

Figure 8.3. Trips and average trip length by main mode, 2005

Mode	Trips per person per year – 1995	Trips per person per year – 2005	Average trip length - 2005 (miles)
Walk	292	245	0.7
Bicycle	18	14	2.4
Car/van driver	425	435	8.5
Car/van passenger	239	236	8.7
Motorcycle	4	4	9.9
Bus in London	13	16	3.8
Other local bus	53	46	4.6
Surface rail	12	16	32.3

Source: DfT (2006)

In the past, modal shift has too often been promoted by its supporters with the fervour of a moral crusade. Hectoring people to give up their cars is neither constructive nor realistic. Sustainable transport policy is not about reducing individual freedoms, but offering greater choice in the way people connect elements of everyday life. A bus or bike has no greater or less intrinsic value than a car or plane in transport terms. Ultimately, any transport mode is merely a means of reaching the desired destination, although travel decisions are not just about connectivity; many more elements come into play, producing a range of subtle barriers to modal shift.

Psychology of transport choices

Nearly four in ten people agree with the statement ‘many of the short journeys I now make by car I could just as easily walk or cycle if I had a bike’. At face value this appears a fairly positive statement regarding the prospects for modal shift, but the fundamental question remains – if change is easy, why are these short journeys still being made by car? The answers lie in a failure of communication by transport policy makers, environmental groups and other stakeholders trying to reduce car use.

There is a tendency to believe that merely raising awareness about problems associated with car dependency and alternatives to car use should be sufficient to induce changes in travel behaviour. This is patently not so. Concern over climate change, traffic congestion and the spread of car-based urban sprawl is running at record levels, yet modal shift has been negligible and attempts to restrict car use are met with hostility.

It is time for a more sophisticated approach to reducing car-dependency, one that acknowledges the role of perceptions, identity, social norms and habits in shaping travel behaviour, and recognises that different groups of people will be motivated by different arguments for change. One study has divided the car-driving public into attitude-based groups. Thus, the ‘Malcontent Motorists’, who comprise an estimated 18% of drivers, feel a moral responsibility to reduce car use, find driving stressful but see no practical alternatives. This is in stark contrast to the 20% of ‘Die Hard Drivers’ for whom the car is a status symbol, and for whom alternatives are deeply unappealing. Clearly, these two groups will respond to different messages. So for the malcontents, communications could focus upon the accessibility of public transport and its positive environmental contribution. For the die-hards, there is the need to overcome poor social stereotypes of public transport users, for instance by garnering celebrity endorsements for buses or trains.

Marketing and advertising agencies have long been using this differentiated approach in other areas. Better communications implies a considerable challenge for governments, environmental groups and public transport operators, but is a vital part of the tool kit for motivating change in travel behaviour alongside ‘harder’ policy measures such as taxes or regulation.

Source: Anable (2005)²⁹⁶, IPPR (2007)²⁹⁷

The UK’s public transport system needs to be revitalised through targeted investment, more coherent policy guidance, changes in governance, closer cooperation between stakeholders, as well as better information and marketing. Cycling and walking should be enabled through much wider provision of suitable facilities and the dissemination of best practice. Smarter choices including car sharing to and from work, and personal and company travel plans should be pursued wherever possible.

Policies that promote modal shift reduce environmental impacts are socially progressive, and are of direct benefit to the one quarter of households that do not own a car. Economic benefits can be counted in terms of reduced congestion and consequent productivity gains.

Sustainable transport must be clearly prioritised at all levels of government and must be backed up by incentives within the tax and land-use planning systems that favour alternatives to car use.

²⁹⁶ Anable, J. (2005) Complacent Car Addicts or Aspiring Environmentalists? Identifying travel behaviour segments using attitude theory. Transport Policy 12

²⁹⁷ IPPR (2007) Positive Energy: Harnessing People Power to Prevent Climate Change

8.3.2. Policy recommendations

8.3.2.1. Smarter choices

Smarter choices or ‘soft measures’ include workplace and school travel plans, personalised travel planning, public transport information and marketing, car clubs, teleworking and home shopping. They are particularly effective at reducing numbers of routine, peak hour journeys, and offer high value for money as a means of alleviating congestion, particularly compared to high-cost alternatives such as road-building. Every £1 spent on soft measures produces economic benefits of £10 or more in congestion savings alone.²⁹⁸ Travel plans, for instance, typically reduce commuter car driving by up to 30% in the workplace, while school run traffic can be cut 15% or more by a travel plan.

Sometimes, the smartest choice is not to travel at all. Telecoms open up a whole world of possibilities for reducing the number of total journeys, especially business trips. Modern tele- and video-conferencing facilities save money that is otherwise wasted in lost productivity and travel costs. In a survey of business travellers, half said videoconferencing would be a preferable alternative to their trip. Teleworking reduces the number of home-work journeys and opportunities for home-working are generally welcomed by employees.

Smarter choices case studies

Good quality workplace travel plans can reduce the number of cars driven to work dramatically, and nearly double the proportion of commuting trips taken by bus, train, bike or on foot. Success rates are highest where enabling measures, such as the provision of bus services or a lift share facility, are backed up by financial incentives or parking management. The telecoms company Orange, for example, reduced the proportion of staff driving to work in its central Bristol office from 79% to 27% following adoption of a work travel plan involving parking restrictions, a lift share database and company bus service.

Local authorities implementing school travel plans report subsequent reductions in car travel of between 10 and 30%. There are a number of ways to get children safely to school without the use of a car, including the use of ‘walking buses’ supervised by parents, road safety education and dedicated school buses. School travel plans reduce peak-hour congestion, improve road safety near schools and encourage children to exercise.

Teleworking is another option with tremendous potential for reducing commuter traffic. The proportion of employees working from home at least some of the time has increased dramatically thanks to broadband internet, and in 2003 included 14% of the labour force – double the number for 2001. BT, appropriately enough, has been at the forefront of the home working trend, and has seen the average car distance travelled per week fall by 186 miles for each teleworking employee. Home workers have access to a technical advice team and online chat forum which recreates some of the social atmosphere of a conventional office.²⁹⁹ BT has been able to reduce its office space and running costs in the knowledge that part of the workforce will be working remotely at any one time. The company has also replaced substantial amounts of business travel with teleconferencing, avoiding more than 860,000 face-to-face meetings last year and saving at least 97,000 tons of carbon emissions.³⁰⁰ BT estimated that it saved £238 million as a result thanks to travel cost and time savings.

Source: DfT (2005) except where stated otherwise

Although smarter choices are part of the official sustainable transport guidance, they remain in the aspirational category rather than on the practical to-do list. Among local authorities implementation is

²⁹⁸ DfT (2005) Smarter Choices - Changing the Way We Travel

<http://www.dft.gov.uk/pgr/sustainable/smarterchoices/ctwwt/>

²⁹⁹ BT (2007) Personal communication

³⁰⁰ University of Bradford and SustainIT (2007) Conferencing at BT

held back by lack of political support and appropriate funding streams, skills shortages and poor integration with traditional infrastructure projects. In a high uptake scenario, smarter choices could reduce peak urban traffic by 20% within the next 10 years.³⁰¹ As a cost-effective means of reducing congestion and emissions, these measures should receive better policy support, instead of being treated as unworthy of serious consideration.

An incoming Conservative government should therefore require travel plans to be made for all new developments, with outcomes-based targets for reduced car trips. In addition we would recommend the use of fiscal measures to incentivise smarter choices including workplace travel plans and more widespread use of ‘virtual’ travel through telecoms.

We note the success of the sustainable transport charity, Sustrans, in pioneering Safe Routes to Schools, which aim to enable more young people to walk and cycle. SRS plans typically involve collaboration between local authorities, school staff, pupils and parents. Potential dangers during the journey to school are resolved, for instance by creating a cycle lane or installing new crossings over busy roads. The school is encouraged to provide enabling measures such as a cycle storage and training. Schools may involve parents, pupils and the local community in delivering a sustainable travel plan. In light of the significant health, environmental and traffic flow benefits of cycling or walking to school, we recommend that all Local Education Authorities are required to produce a SRS strategy for every school, primary or secondary, in the UK. They should also insist that no school is allowed to refuse to harbour bikes on its premises. Some still actively discourage cycling because they deem it dangerous, or because they think that bikes are a nuisance, occupying space in the playground.

8.3.2.2. Walking and cycling

Despite strong anecdotal evidence to the contrary, official statistics show that the number of trips individuals take by bike and on foot has fallen. The national average conceals areas which have successfully increased levels of cycling and walking and walking remains first choice for very short trips, with three quarters of journeys of less than one mile completed on foot. Even at this distance, over 20% of trips are completed by car. The average person now completes half the number of cycle trips recorded in 1985.

The many social and environmental benefits of walking and cycling have been catalogued for years, most recently in terms of averting the contemporary crises of environmental damage, congestion, and obesity. The wider role of these ‘soft modes’, walking in particular, has been promoted as a means of bringing about an urban renaissance, in which streets become pleasant places to walk, meet and talk.³⁰² It is also argued that small schemes to promote walking and cycling might reduce congestion more cost-effectively than road-building or national road user charging.

Nor is analysis lacking upon the reasons for the relative decline of cycling and walking, which is attributed directly to car-based land-use planning. The creation of dispersed shopping, work and leisure centres is the opposite of the clustered, high density local facilities most conducive to non-motorised transport. In road design, cyclists’ and walkers’ needs are often considered as an afterthought. The policy recommendations in Section 8.2. should go some way to restoring a more equitable framework for choosing between cars and other modes.

No-one is against cycling or walking, but like smarter choices, soft modes usually rank lowly on priority lists for local authorities that deliver transport planning (some positive exceptions are described in box below). This is exacerbated by competition for transport funding between cycling and

³⁰¹ DfT (2005) Smarter Choices - Changing the Way We Travel

³⁰² House of Commons Environment, Transport and Regional Affairs (2001) Walking in Towns and Cities <http://www.parliament.the-stationery-office.co.uk/pa/cm200001/cmselect/cmenvtra/167/16702.htm>

other schemes, and by weak support from other stakeholders with an interest in cycling, particularly health and education authorities.³⁰³

Best practice examples for cycling³⁰⁴

In London, cycling increased by over a fifth between 2003 and 2004. Enabling factors included the sheer volume and relatively slow speed of traffic in the capital, the introduction of the congestion charge, and improvements in cycling infrastructure.

In York the opening of the Millennium Bridge with cycling facilities in 2001 led to an increase of 17% in the number of cyclists crossing the river; and in Hull, 14% of journeys to work are made by bike thanks in part to speed management policies adopted by the local authority.

All these schemes involved improving the integration of cycling into wider transport policies, which was achieved through a range of measures including road-space allocation, dedicated cycle ways and measures to limit demand for private cars.

Source: DfT (2005)

At around £1 per head per year, cycle spending in England still lags behind Continental European cities that have successfully increased cycling with sustained expenditure of around £5 per head per year.³⁰⁵

In this context, the formation of a new independent expert body, Cycling England, in 2005 to promote cycling is a positive development. The model of involving several stakeholder groups, including health, education and culture, is promising, as is the decision to work intensively with highway authorities to develop a number of Cycling Demonstration Towns which in turns can act as exemplars of best practice.³⁰⁶

This leads us to propose that walking and cycling should be given higher priority in central government guidance to local authorities. Cycling England should be given a fair chance to achieve its objectives including the dedication of extra financial resources. Sustainable modes should be given specific funding priority. Government should work alongside professional bodies and voluntary organisations to disseminate best practice, including the marketing of walking and cycling, and their incorporation into travel plans.

The use of bicycles could be further extended, particularly for older people, by the electric bicycle that has been much improved, particularly in the Netherlands. The present law is still confusing and an incoming Conservative government should clarify it so that all electric bicycles, including the 'twist and go' variety, should be classified as bicycles and not as motor vehicles. It would be reasonable to place a limit on the power delivered so that it closed off a possible loophole but the present rules are unduly prescriptive and appear to include some such bikes but not others. In the countryside these significantly improved products might well provide an alternative to the motor car for some travelling shorter distances to work and a number of major companies are at present considering using them as part of their travel plans.

Because of the lack of coherent land use planning, the UK's urban centres have become excessively car dependent compared to elsewhere in Europe. Improving public transport to a standard where it offers an attractive alternative to the reliability, comfort and convenience of a private car makes

³⁰³ DfT (2005) Delivery of the National Cycling Strategy – A Review

³⁰⁴ DfT (2005) Delivery of the National Cycling Strategy – A Review

³⁰⁵ DfT (2005) Delivery of the National Cycling Strategy – A Review

³⁰⁶ Cycling England website: Demonstration Towns

<http://www.cyclingengland.co.uk/demotowns.php>

common sense. This will also include better facilities for pedestrians and cyclists, and stronger on-street measures to help buses beat congestion and reach destinations on time.

There are many ways in which promoting urban cycling can be imaginative, appealing and surprisingly cost-effective. Through the “Velib” initiative, Paris has recently introduced more than 700 pick-up/drop off points where sturdy easy-to-ride cycles can be rented free for the first half hour and for very little thereafter and then dropped off at any of the other 700 points. The scheme is commercially underwritten and follows the example of Lyon, where J C Decaux sponsored a scheme in 2005 to deploy 2000 cycles in 175 pick up points. Each bike is used about 15 times a day. The result is not only low cost, but has led to a huge increase in cycling, sparking interest and enthusiasm among those perhaps previously unwilling to make the change.

We strongly recommend the introduction of a Paris-style ‘Cyclocity’ scheme in British cities where hitherto there has been a distinct lack of imagination in this area. There is no reason whatever why it could not be just as successful here.

We also advocate much more active support of pedestrianisation within central government guidance to local authorities. Areas such as the Marais in Paris show the potential of car-free initiatives for enhancing the urban environment by reducing pollution while increasing accessibility and safety. In the UK, the centre of York is largely pedestrianised which, despite early scepticism, has resulted in widespread popular support and improved foot-fall for retailers. Over one million people visited Oxford Street and Regent Street during London’s largest ever traffic free day in 2006. The sensible limitation of vehicular access to areas of the West End in daylight hours would be good for tourists and traders alike, whilst allowing deliveries to be made overnight. We strongly encourage the next mayor of London to implement such measures.

8.3.2.3. Buses

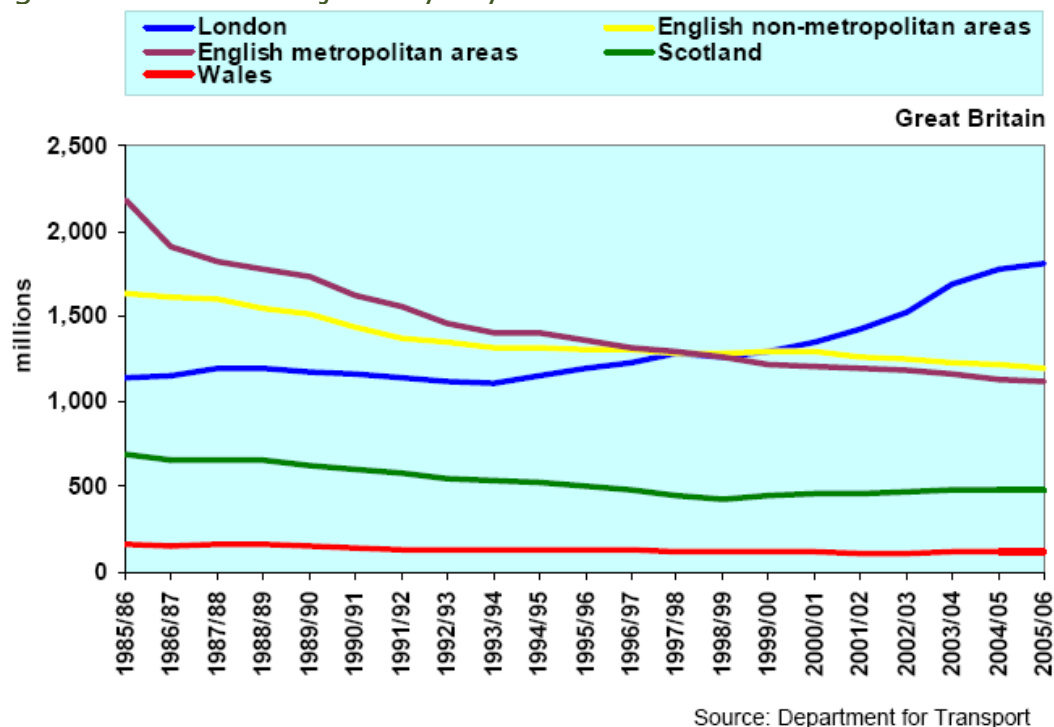
Buses are the most accessible, and versatile form of public transport, servicing a wide variety of journeys. They reduce rush-hour traffic and are sometimes the only form of transport available to people living in more dispersed communities.

Although national investment in bus services has increased, the number of bus passenger journeys declined sharply between 1985 and 2005 (see Figure 8.4.) as car ownership increased. This contrasts to London, where bus patronage rose 59% over the same period.³⁰⁷ However, even in light of the decline, in 2004, the total number of bus journeys nationwide was more than double the combined figure for national rail, light rail and London Underground.³⁰⁸

³⁰⁷ DfT (2007) Transport Trends

³⁰⁸ Confederation of Passenger Transport (2006) On the Move
<http://www.cpt-uk.org/documents/CPT%20Brochure%20NEW.pdf>

Figure 8.4. Local bus journeys by area



Source: DfT (2007)

The decline in bus patronage outside London is due to increasing car ownership combined with the absence of the kind of congestion from which London suffers. This means people are comfortable to commute by car, workplace parking is relatively easy to access. A further issue is that land-use practices have taken daily journeys – to school, work or shops – beyond the local area, making destinations harder to connect by bus.

These are separate issues from the management of bus services and the deregulation initiated by the 1985 Transport Act, enabling ‘on the road’ competition between any bus operator licensed by independent Traffic Commissioners. Of itself, deregulation provides a sensible framework for running the bus industry, and competition has led to more rapid renewal of the bus fleet as well as a more efficient costs base.

London is a special case, with Transport for London tendering for bus services in a situation of regulated competition. The capital’s high levels of bus patronage are sometimes used as an argument for re-regulation, but regulatory structure is not actually the reason for this success. Spending on buses per capita in London is almost treble that in other metropolitan areas, while the sheer volume of passenger journeys supports high-frequency services.³⁰⁹ Moreover, there are active disincentives to car use, including the high price and limited availability of off-street parking. Bus lanes and other priority measures have proven the key to increasing patronage in the capital and elsewhere (see box below). We do not believe that the people of London are inherently more willing to use public transport than their fellow citizens in other areas. They are not making a moral or political judgement when choosing to travel by tube or bus. They are simply employing the mode of transport which is so often significantly cheaper, faster and less worry than travel by private car. As and when other UK urban centres are similarly congested the appeal of public transport will increase exponentially.

³⁰⁹ House of Commons Transport Committee (2006) Bus Services Across the UK

What makes a good bus service? Case studies of increasing patronage

Buses are sometimes perceived as a ‘last resort’ option, taken only by people with no other choice. This is not true for London and a growing number of other towns such as Brighton and Hove, where car ownership has declined as a direct response to good public transport facilities.³¹⁰ In other words, people who are able and can afford to run a car are choosing to take the bus instead. But to inspire such trust, bus services must be frequent, reliable, accessible, hassle-free and offer good route coverage. Achieving these objectives is not a matter of re-regulation. It is much more about land-use planning and other enabling measures that enable the bus to reach its destination quickly and on time.

Increases in bus patronage are frequently related to the introduction of effective bus priority measures. The section describes a number of successful case studies.

In York: A package of bus priority measures designed to alleviate congestion in the historic city centre mean that journeys are now up to 12 minutes faster by bus than by car, contributing to a 50% increase in bus use since 2000.

In Leeds: Bus patronage has increased 5% thanks to dedicated road space for buses, bus stop enhancements, investment in new vehicles and improved timetable information.

In Brighton and Hove: A good working relationship between the local authority and bus operator has provided a framework for investment in bus lanes, park and ride schemes and prioritised traffic signals. Town centre traffic has decreased 10% over three years and bus patronage is growing at 5% per year.

In Cambridge: New park and ride sites, traffic light priority and bus lanes have contributed to a 70% patronage growth in the city. A new fleet of low-floor buses have been branded and proactively marketed to potential customers.

Source: Confederation of Passenger Transport (2006) On the Move

In England’s six largest conurbations, Passenger Transport Executives plan, procure and promote bus services. They are responsible to Passenger Transport Authorities made up of representatives of local councils. However, the relationship between local authorities and bus is often poor. Local authorities are reluctant to invest in supporting infrastructure for the use of operators who are perceived to be driven by short-term commercial motives. Likewise, operators may be reluctant to invest in new buses, new routes, or more frequent services if local authorities do not commit to infrastructure measures.

We recommend that Bus Quality Partnership arrangements offer a useful framework for improving this working relationship. Under such a partnership the local authority agrees to provide a minimum standard of on-street bus priority and the bus operator commit to minimum standards in terms of the vehicle emissions, DpTAC specification and minimum frequencies with that agreement monitored by the Area Traffic Commissioner. The Commissioner would then ensure that only operators offering the same or superior service quality and vehicles would be able to register services on the nominated route.

³¹⁰ Goodwin, P (2007) Trams, Cars and the Process of Gentrification. Local Transport Today 07/06/07

We therefore propose that an incoming Conservative government should replace the two-tier model of Passenger Transport Authorities and Executives with a less politicised single body, a Metropolitan Strategic Transport Authority. It would be invested with new powers enabling it to make highways decisions related to increasing bus patronage and restraining demand for car use. These MSTAs should extend beyond the six existing PTE areas to cover travel-to-work areas for all multi-authority conurbations.

It is important, too, to give bus and train regulators the remit to insist upon interoperability of tickets and integrated timetabling. They should also have the power to require public transport operators in the local area to invest in a common advertising and marketing budget designed to increase public transport ridership. Simply providing visitors with easily understood and widely available explanations of fares, how to pay them, whether payment is on or off the bus or train, and how oyster or similar systems work can do much to increase the use of public transport.

Poor information provision and the lack of coordinated schedules and tickets are frequent complaints about buses, and public transport more generally. There is no justification for Office of Fair Trading rules that preclude through-ticketing and coordination of bus service schedules.³¹¹ The normal competition regime should be adapted where it impedes the development of integrated transport services of benefit to the travelling public. We also suggest the introduction of regulation to ensure mandatory through-ticketing and coordinated schedules between public transport modes.

Further, the efficiency of existing information delivery is low. People tend to use only the bus services they already know about, and are not actively encouraged to try new routes. This is the classic opportunity to develop the use of known technology. Interactive travel information provided at bus stops could overcome this knowledge gap, allowing customers to plan their journey and identify the cheapest or quickest routes. It should be a feature of all urban transport plans, not least because in many areas private sector sponsorship will underwrite the costs.

8.3.2.4. Transport and accessibility

Access to good quality public transport is particularly important for households without a car. In 2005, one quarter of UK households did not have access to car, rising to above 30% in metropolitan built-up areas.³¹² Some households have chosen not to own a car. This is particularly true in cities where frequent, high quality public transport services offer a genuine alternative, and where work, home, family and leisure activities are clustered nearby. These can perhaps be described as the ‘willing’ non-car owners. Their number will increase when effective measures to provide better connectivity without the use of private cars become more widespread.

In rural or suburban areas, however, it is a different story. Rates of car ownership are higher than average – only 11% of households do not have access to a car – and it can be inferred that these rates are so high precisely because few practical alternatives exist to the private car. Indeed, a higher percentage of rural households own two cars or more – than no car at all. Far from opting out of car ownership by choice, significant proportions of non-car households in rural or suburban areas are unwilling or unable to run a car due to age, disability, driving bans, or a simple lack of affordability.

Survey data backs this up, indicating that car availability is strongly related to income, with over half of households in the lowest income quintile lacking access to a car, compared with one in ten of those in the highest quintile. Single parent households are four times less likely to own a car than households with at least two adults. Not only are older people less likely to own cars, they are also more likely to

³¹¹ House of Commons Transport Committee (2006) Bus Services Across the UK

³¹² DfT (2006) Transport Statistics Bulletin: National Travel Survey

experience problems with using other modes. 45% of people aged over 70 report difficulties in walking or catching buses. The availability or otherwise of a car has important ramifications for travel behaviour. Members of car owning households make 45% more trips per year than their non-car owning equivalents, and travel over two and a half times as far.

These findings, of themselves, argue strongly in favour of the types of land-use planning and fiscal reforms outlined in Sections 8.2 and 8.4, which seek to alleviate the negative impacts of car dependency. Such policies are socially progressive, since they would begin to close the various equality gaps associated with current transport pricing and access, by encouraging the use of and investment in walking, cycling and public transport.

Although buses are a lifeline for non-car-owning households in rural and some suburban communities, there are inherent difficulties with providing conventional services in these areas. Low population densities, lack of demand peaks and little patronage of existing services are a poor fit for commercial operators. As a result, some 16% of all bus services are subsidised through the Rural Bus Subsidy Grant, which disperses around £50m a year³¹³ on top of local authority support which produces £200m from council resources.³¹⁴

This situation raises a number of questions, starting with what alternatives are on offer to conventional bus services in low density areas, and how these alternatives are supported. Dispersed populations tend to need demand-responsive transport – this means that operators need the flexibility to vary service routes and timings according to passenger needs. Different types of demand-responsive transport are described in the box below. In many cases such services are not attractive to commercial operators, and rely upon the voluntary sector.

Examples of sustainable travel in areas of low public transport demand

Many types of demand responsive transport are already at work in the UK and abroad. The flexibility of such services can be varied to suit local needs. In Wiltshire, for instance, the ‘Wigglybus’ operates hourly services along a core circular route, but will divert off the main route in response to passenger requests, which are handled through a call centre. The driver’s route is then calculated, and waiting passengers are given a ‘time window’ of 10 minutes or so in which to expect their bus.

In some areas, transport services do not operate at all unless someone has phoned to request them. This is the case for many of the bookable shared taxi-buses in Germany, Denmark and the Netherlands, which run on bus routes in the evening and at weekends when conventional bus services are not available.

Another model is to time the arrival of a demand-responsive bus or taxi-bus to connect with conventional public transport on major routes, as is the case in some parts of Germany.

Besides the provision of more innovative public transport services, a host of other factors can play a supporting role in enabling more sustainable travel patterns to evolve in rural communities. Many of these, including the integration of public transport ticketing and timetabling, are equally relevant in the town or the country. Sympathetic road design involving changes to traffic management can make cycling or walking a safer, more attractive option, while efforts to reduce travel demand, for instance by encouraging people to ‘buy local’ can have positive side-effects for retailers and other businesses in the community.

Sources: Transport 2000 (2003)¹

³¹³ DfT website (2007) Introduction to Bus Grants
<http://www.dft.gov.uk/pgr/regional/buses/busgrants/introductiontobusgrants>

³¹⁴ House of Commons Transport Committee (2006) Bus Services Across the UK

Although community transport has huge potential for providing accessible, affordable transport for socially vulnerable groups, its development is held back by regulatory small print and lack of revenue support. The Government has recently endorsed a series of recommendations offered by the community transport sector, which would relax the most burdensome licensing restrictions concerning the registration of community transport vehicles and payment of drivers.³¹⁵ We welcome these moves, and call on a future government furthermore to establish a subsidy appraisal framework that fully captures the benefits of community transport, including modal shift and social inclusion. As the Commission for Integrated Transport has argued, demand-responsive transport can offer very good value for money compared to other options, and support for rural bus services should reflect this.³¹⁶

To take this further we recommend implementing changes to Sections 19 and 22 of the Transport Act, simplifying the process for awarding permits to community transport services. We also recommend updating the appraisal framework for Rural Service Operators Grant to capture the full benefits of community transport. The better regulation task force should review the regulations surrounding taxi licensing and make recommendations for a significant reduction in the red tape now surrounding it. We recommend that an incoming Conservative government should seek the support of the ABI and individual insurance companies to establish a new simplified insurance regime that would allow drivers to provide informal taxi services under their normal insurance cover.

The very promising growth of car services like Streetcar and City Car Club, which make vehicles available to members as and when they need them for a modest charge has made it increasingly easy to live in a city like London without owning a motor car. We would hope that an incoming Conservative government would encourage other local authorities to be prepared to provide the small amounts of seed money that would make such schemes viable in much smaller communities. It is a very simple way to take cars off the road, even if it merely ensures that families do not buy a second car. As part of an imaginative town transport scheme it could mean many more individuals and families giving up their cars.

8.3.2.5. Passenger railway structure and management

The last decade has seen strong growth in the use of rail. In 2004, 42 billion passenger kilometres were travelled by rail, an increase of nearly 50% from 1994. Since then the total distance of train kilometres operated has increased by a third. The strongest growth has been on London and South East commuter routes, followed by regional services and long distance. Overall, Network Rail expects demand to grow another 30% in the next ten years.³¹⁷ The average person now takes 16 trips by surface rail per year, travelling an average 32 miles each time.³¹⁸ This increase in patronage means there are now serious capacity constraints on the network, as indicated by Figure 8.5. Delays and overcrowding have become endemic along key cross-country routes and approaches to London.

The very success of the private train operators in attracting record numbers of new passengers has ironically created the new challenge of meeting the need for even greater investment to unlock capacity. This investment takes two forms – the first targeted upon localised improvements such as gauge separated crossings and bypasses of busy track sections, the second upon the creation of discrete new rail corridors.

We do not attempt a comprehensive critique of the structure and performance of British railways in this report but some commentary on perceived weaknesses in the current structure is pertinent. The length and structure of passenger rail franchises awarded to train operating companies (TOCs) has

³¹⁵ DfT (2006) Putting Passengers First

³¹⁶ CfIT (2004) The Bus Industry – Encouraging Local Delivery

³¹⁷ Network Rail (2006) Business Plan 2006: Delivering for our Customers
http://www.networkrail.co.uk/documents/3127_Business%20Plan.pdf

³¹⁸ DfT (2006) Transport Statistics Bulletin: National Travel Survey

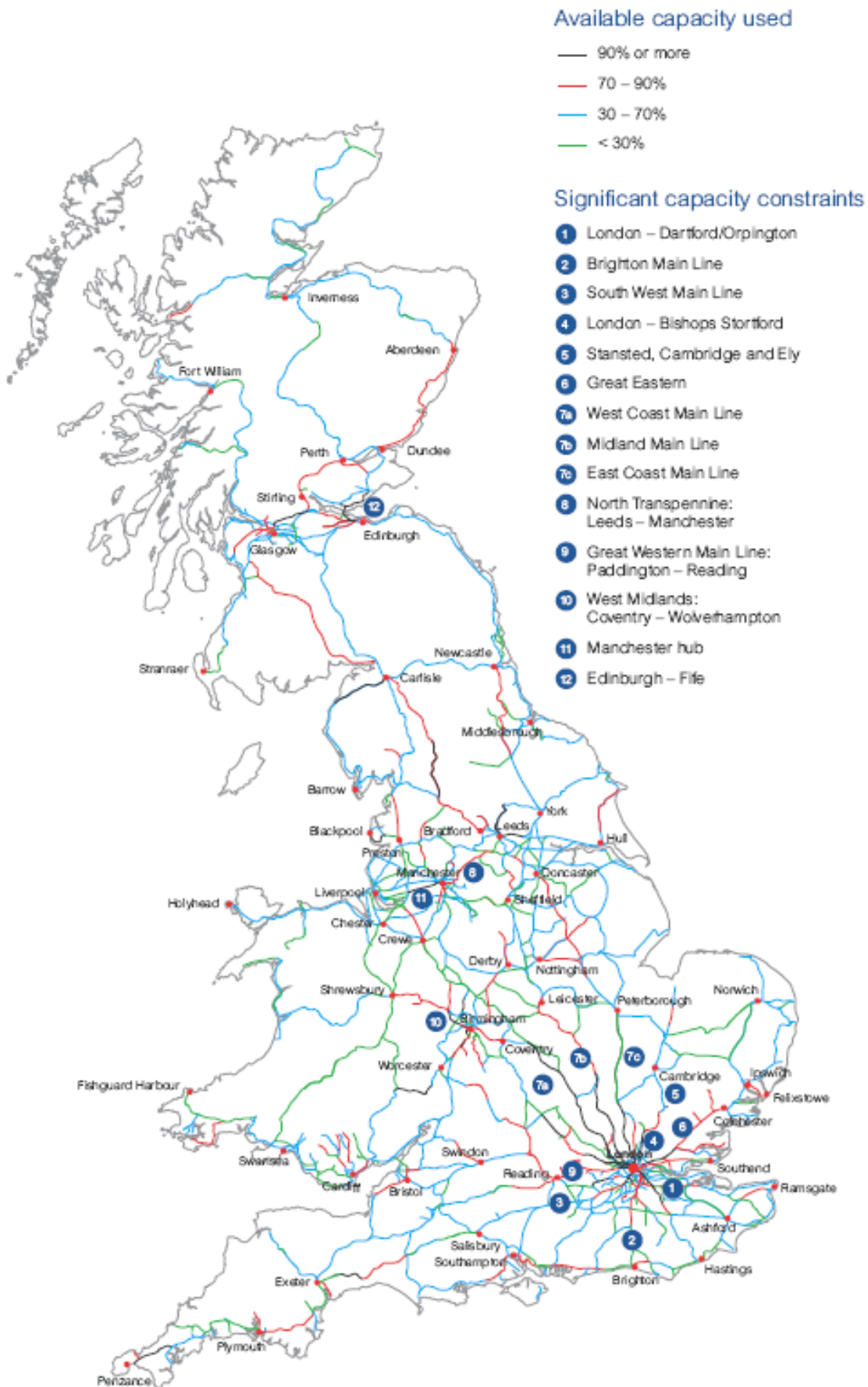
drawn particular criticism over the years. It is widely agreed that short franchises discourage investment in the railway and increase the costs of delivering services. We recommend longer franchises, ideally of between 15 and 25 years in length, incorporating the right to terminate poorly performing contracts at specified review dates. We would expect then to get faster decisions on redevelopment of existing facilities as well as on investment in new capacity. In order to streamline the whole process we recommend that a recreated Office of Passenger Rail Franchising (OPRAF) should take on powers currently held by Department for Transport so as to relieve the Department of the responsibility for detailed commercial and operational negotiations, and free to concentrate on the broader strategic issues of an expanding railway.

One of the biggest tensions within current railway management is the structure of the relationship between Network Rail and the operators. It too often inhibits cooperation and creates perverse outcomes. The interests of train passengers, franchise operators, and infrastructure provider must become better aligned. There is a case for stronger vertical integration on regional networks, albeit on a phased, evolutionary basis. This could foster a new climate of trust between rail stakeholders and offer tangible benefits through greater flexibility, improvements in reliability and transparency, and better planned investment.³¹⁹ We therefore recommend that an incoming Conservative government should explore the potential of vertically integrated railways organised on a regional basis, in order to align the interests of rail stakeholders, and increase value for money from the rail network.

³¹⁹ House of Commons Transport Committee (2006) Passenger Rail Franchising

Figure 8.5. Capacity utilisation index map

Source: Network Rail (2006)



8.3.2.6. Rail capacity investment

The vast majority of the money currently spent on the railways maintains existing routes and services. As Figure 8.5. shows, there is an urgent need to enhance capacity on a number of rail corridors to accommodate substantial additional passenger growth.

Lower cost enhancements include changes to signalling and timetabling to increase train frequency on different sections of track. At higher cost, individual services can carry more passengers with the deployment of longer trains and platforms. At the top of the price range, capacity can be increased by upgrading existing routes or developing new ones.

The UK lags behind many other European countries in its provision of high speed rail. Figure 8.6. compares the length of high speed rail routes (classified as over 250km per hour) in various countries.

Figure 8.6. High speed rail capacity in Europe, by route length (kilometres)

Country	HSR in use	HSR in development	Total HSR
France	1,573	320	1,893
Spain	941	644	1,585
Germany	793	88	881
Italy	248	618	866
Belgium	120	77	197
Netherlands	0	120	120
Britain	74	39	113
Total HSR	3,749	1,906	5,655

Source: GreenGauge 21 (2006)

It is difficult to argue that our failure to invest in high speed lines has been the result of any profound judgement apart from the natural unwillingness of successive Governments of both political persuasions to invest in infrastructure. In the recent agreement between the European rail companies to exploit the opportunities for long-distance fast travel, Britain signed up with 1/50th of the capacity of the grouping. The published map of the connections illustrated exactly where the high speed lines in the UK were needed. As one would expect, the East and West Coast Lines figure prominently. These are the very routes which would enable us to provide an alternative to domestic flights, with their high carbon emissions, noise, and other environmental impacts upon local communities. High speed rail services between popular hubs should be developed to a level where they offer a reasonable alternative to aviation, as well as to car use. This means competing on time, as well as cost. It currently takes around 5 hours to travel from London to Glasgow, and 2.5 hours from London to Leeds. High speed rail could reduce these journey times to 2.75 hours and 1.5 hours respectively.³²⁰

The fact that capacity constraints already exist on the west and east coast main lines also argues for step change, rather than incremental improvement in rail capacity, as does the objective of rebalancing patterns of economic growth. **An incoming Conservative government therefore needs to review rail capacity, investing to relieve key passenger and freight bottlenecks, and to develop high speed rail links between the North and South after a thorough but rapid review of priority destinations and suitable technologies.**

8.3.2.7. Rail fares and ticketing

The car usually appears cheap when we compare the cost of travel because we include only the cost of fuel and forget the heavy costs of buying and maintaining it in the first place. Rail arguably loses out because we are not prepared to look for the cheapest prices in the way that we do when we plan to fly.

³²⁰ GreenGauge21 (2006) Manifesto: The High Speed Rail Initiative

We resent very high differentials between off-peak, advance rail tickets, and peak-time, walk-on rail tickets. Yet that is precisely the model used by low cost airlines which we readily, if illogically, accept. This is partly the product of historical perception. Air fares were originally very high and the fact that they can now be so very low is seen as a bonus. We think of the car as a necessity, so we discount the overheads anyway. Add to that the transparency of air fares, the contrasting impenetrability of rail fares, and the preference of most people to know nothing of the cost of running their cars, and it is no wonder we make travel decisions without reference to the real cost.

A bigger problem even than price is the overly complex structure of rail fares, with ticket names, conditions and restrictions varying between different operators. According to rail consumer watchdog Passenger Focus, the National Fares Manual for 2005 ran to “over 70 fare types, governed by 760 validity conditions”. This structure urgently requires simplification, to maintain growth in rail demand and help passengers source the best deals. **We therefore propose that the Rail Regulator should be given a remit to demand the simplification of rail ticket structure, and to insist upon the interoperability of rail tickets as well as integrated timetabling.**

Other simple changes, such as the inter-availability of concession cards, could make a significant difference. People over sixty have to apply separately for their Railcard and their Freedom Pass for London buses and the Tube. A single photo card, akin to the driving licence, issued conveniently and capable of universal use would increase public transport use among that generation, just as the Oyster card has among regular users in London. Similarly, people are keen on the airlines’ frequent flyers programmes. Modal shift to rail would be encouraged by a similar system, already used by Eurostar, particularly if it included access through the recently announced European rail link-up to travel to continental destinations.

8.3.2.8. Road freight

Freight movement in the UK is dominated by road transport. It accounts for 64% of all goods moved and has increased 76% between 1980 and 2005 to reach 163 billion tonne kilometres. As a result of changes in distribution patterns and the types of good moved³²¹, the average length of haul has also increased so that, at 87 kilometres, an average freight payload is driven one third further now than in 1980. Heavy goods vehicle travel has increased 48%. The number of HGVs in the UK has remained fairly stable at around 400,000, although the average vehicle is now much larger.³²² Light van traffic, of which only a proportion is involved in goods movement, has more than doubled since 1980, to 63 billion vehicle kilometres.

Carbon emissions per tonne kilometre vary significantly between vehicle types and assumed loadings. Trucks of less than 10 tons produce up to five times more carbon than the most efficient large HGVs, which are only slightly more polluting than freight trains.³²³

Changes in supply and delivery patterns have driven the growth in road freight. Patterns of food transport, which accounts for one quarter of HGV kilometres in the UK³²⁴, have altered dramatically. The centralisation of food supply and sales means that most goods’ distribution is based upon regional centres and just-in-time delivery. Given that transport is typically only a small percentage of total supply chain costs, it is not surprising that lorries are increasingly used as ‘warehouses on wheels’. However, the carbon effects are complex and efforts to reduce so-called ‘food miles’ in isolation may do little to increase sustainability in the food system as a whole. Nonetheless, road freight now

³²¹ DfT (2007) Transport Trends

³²² DfT (2007) Transport Trends

³²³ CE Delft (2003) To Shift or Not to Shift

³²⁴ Defra (2005) The Validity of Food Miles as and Indicator for Sustainable Development
<http://statistics.defra.gov.uk/esg/reports/foodmiles/execsumm.pdf>

accounts for around 8% of UK CO₂ emissions.³²⁵ It is also associated with other environmental impacts including noise and air pollution and economic costs including congestion and damage to road surfaces.

Would a 'food miles' label help reduce carbon?

The concept of 'food miles' – the distance food travels from the farm to the consumer – has come to epitomise popular concern over the sustainability of globalised and industrialised agriculture. The appeal of food miles as a target for environmental censure lies in its apparent simplicity. After all, transport is a visible source of carbon emissions and food miles have increased dramatically thanks to changes in agricultural production, distribution, and retailing. Food transport within the UK accounts for 10 million tonnes of CO₂ per year. This figure nearly doubles if we include the ship, lorry, and plane miles taken to deliver produce to UK shores. HGV food tonne kilometres in the UK have risen 100% over the last three decades. Air freight, by far the most carbon-intensive mode of food transport, is increasing even faster.

If the carbon footprint of food systems fell neatly into step with 'low' or 'high' food miles, a labelling system based on distance travelled would be a welcome addition. However, the life cycle carbon emissions of any food product comprise a number of elements besides transport. Reducing food mileage can raise emissions in other parts of that life cycle. From a carbon perspective, it may be better to truck outdoors-grown tomatoes from Spain than to source them locally from heated glasshouses in the UK.

There are also complex trade-offs between short- and long-distance sourcing within food transport itself. Although the total weight of food transported in the UK increased by around a third in the 1990s, the total mileage driven to transport this food increased much less, thanks to the use of larger vehicles, fuller utilisation of lorry space, back-hauling, and other efficiency factors. Thus food travelling in large, fully packed lorries may clock up less transport emissions than for smaller vehicles travelling shorter distances. Transport mode is also critically important – apples shipped from New Zealand do not necessarily have a very different carbon footprint from those sourced from France by lorry. When the total carbon picture is examined, cut flowers from Kenya may cost the environment less than those from Holland.

As an indicator of sustainability, food miles capture too small a part of overall product life cycles to be truly representative. Developing any methodology for assessing food miles raises practical problems too. For instance, how far up or down the supply chain should a label go? Should it include emissions associated with customers driving to supermarkets, or with farm employees driving to work? There are also difficult ethical questions associated with moves to limit the food miles associated with agricultural exports from developing countries, where air freight of cut flowers or other perishables may constitute a key part of local economic growth.

None of this is to say that food miles should be discarded. As a tool of public engagement in climate change they have already proven their worth. The government should be supportive of attempts by the food industry properly to reduce its carbon footprint. The lead taken by Tesco, Pepsico, Innocent, and others to label products with their life-cycle carbon footprint has been followed by a comprehensive programme for the whole industry driven by the Food and Drink Federation. Cadbury's recent announcement of an imaginative plan to reduce their total footprint in absolute terms is an encouraging start to this initiative. The role of the Carbon Trust has been crucial in this process and, in our proposals for its future, we would want to encourage the extension of its programme, not least because it is able to ensure that standards produced here in the UK can be aligned with those developing elsewhere in Europe.

³²⁵ Defra (2005) Sustainable Development Indicators.

An incoming Conservative government should continue to broaden the debate over food transport and the sustainability of the food industry as a whole, and, in doing so, seek the more holistic solution we outline in our Chapter on Food and Farming. It is there that we also discuss the measures that government should take to reduce its own contribution to the carbon footprint of the food industry.

Just as we have seen in discussing passenger transport, the development of more sustainable freight distribution relies on a variety of measures that depend on the availability of lower carbon modes, the relative pricing of these modes, and the shape of land-use planning decisions. The measures outlined in the Sections below and in Section 8.4 should increase the attractiveness of alternatives to road freight. Here we propose, more narrowly, that government could also play a role in encouraging the use of technologies that reduce the empty running of goods vehicles, which currently account for one quarter of road freight mileage. It should, therefore, work with the industry to set up demonstration projects for optimising freight logistics through IT applications. These would, in particular, seek to maximise back-hauling by matching goods to spare freight capacity. A future government should also look again at the current restrictions on freight vehicles to see whether the balance struck between size, axle weight, and road wear is the optimum to deliver the lowest carbon footprint. Carbon now has to be part of every equation.

Besides climate impact, road freight has a number of other negative impacts on local environments, particularly in built-up areas. There are around 400,000 HGVs on British roads and many more smaller vehicles involved in freight delivery. Traffic hold-ups, noise and other inconvenience caused by freight movements are a common annoyance in urban centres, for residents and other road users alike. There is considerable scope to increase efficiency of urban freight deliveries through better-designed logistics, with benefits for business, congestion and the environment.

One promising model we would like to see followed up is the grouping of deliveries according to final destination. A Regional Distribution Centre (RDC) would allow large trucks to break bulk outside the city and transfer loads to smaller less polluting vehicles that make local deliveries to city centre locations much more efficiently in terms of cost, congestion and pollution. So if a retail chain needs to make deliveries to each of 20 branches across an urban area all the deliveries would now probably be made using one single HGV, stopping 20 times and getting emptier and emptier after each stop. An RDC plan would allow the HGV to stop just once.

We recommend the setting up of demonstration projects for optimising freight logistics through IT applications, to maximise back-loading by matching goods to spare freight capacity. We also recommend an exploration of policies for reducing urban freight mileage, for instance encouraging companies to amalgamate deliveries for each local area. On a trial basis, we recommend the introduction of Priority Vehicle Lanes (PVLs) which would be reserved for buses during commuting peak hours but used by freight vehicles at off-peak times to ease congestion.

8.3.2.9. Rail freight

There has been a 60% increase in total freight tonne kilometres travelled by rail between 1995 and 2005, largely thanks to increases in imported coal and the eastwards migration of European manufacturing.³²⁶ Rail freight now accounts for 9% of all goods moved in the UK, and 10% of total train kilometres. The average freight train removes around fifty HGV journeys from the roads, and in 2005 rail freight removed some 1.2 billion lorry kilometres.³²⁷

Strong demand growth is forecast, but will require extra network capacity, particularly in cross-country corridors, on routes to the major ports, and in respect to freight interchanges between road and

³²⁶ Network Rail (2006) Business Plan 2006: Delivering for our Customers

³²⁷ Office of Rail Regulation (2006) National Rail Trends: 2005-2006 Yearbook

rail. The national infrastructure plans referred to in Section 8.2. should define priorities for rail freight investment, and the changes to railway structure recommended above should be used to deliver this capacity cost-effectively.

We are concerned by moves to transfer costs for freight-only lines entirely to freight operators, set in motion by the 2004 Future of Rail White Paper. This would represent a departure from the 2001 Freight Charging Policy, in which it was agreed that freight would pay variable usage charges – towards electricity costs, or to reflect the costs of track wear and tear – but would not contribute towards fixed common costs, the logic being that much of the freight network runs along passenger lines, that the fixed costs attributable specifically to freight trains are low, and that applying a mark-up could price some freight traffic off the network. We believe this logic still stands. Variable charges already account for around 15% of the cost base for rail freight, and we note the Office of Rail Regulation’s concern that the additional charges proposed could damage the rail freight market.

We therefore propose that an incoming Conservative government should promote a wider interpretation of the ORR’s statutory objectives, which at present are narrowly defined around increasing efficiency of network utilisation and ensuring non-discrimination between users. Ultimately, charges for rail freight must be considered with reference to enabling more sustainable freight distribution. The true competitor for rail freight is road freight, not passenger trains. It is this that should occupy the regulator whose remit should be changed to enable him to reflect this more mature view of competition and recognise his role in ensuring cost-effective carbon reduction.

8.3.2.10. Water freight

Over 95% of international freight traded with the UK travels by sea. Shipping is the least carbon intensive way of conducting international trade – and shipping and its related services are an enormously important part of the UK economy. Since 1980, UK international freight tonnage has increased 77% to 446 million tonnes in 2005.³²⁸ Imports are growing faster than exports. Like international aviation, shipping emissions are not captured in the Kyoto agreement or recorded under national emissions inventories, and relatively few attempts have been made to study them.

Nevertheless, shipping has grown very fast as world trade has doubled in 25 years and we cannot afford to ignore its carbon contribution. The global fleet of 70,000 ships is estimated to produce around 4% of global carbon emissions, something of the same order as aviation.³²⁹ Ships also produce large amounts of nitrous and sulphur oxides (NO_x and SO_x) – and are predicted to contribute more to EU inventories of these pollutants by 2020 than all other sources combined. The sulphur content of shipping fuel is around 27,000 parts per million, compared to just 10-15ppm for road fuels in Europe.³³⁰

We are therefore faced with an urgent need to reduce the pollution footprint of shipping. An immediate step would be to improve the quality of the fuel used to achieve environmental effects similar to those achieved by land-based vehicles. The lack of pressure from the public has enabled the shipping industry to continue to operate in ways which would be unacceptable on land. Yet the fact that the damage is done out at sea is irrelevant in terms of its effect on the climate. International shipping should be incorporated into the total of national emissions inventories as a matter of urgency. Such inventories would then become part of the basis used for policy-making.

³²⁸ DfT (2007) Transport Trends

³²⁹ Guardian (03/03/07) CO₂ Output from Shipping Twice as much as Airlines
<http://environment.guardian.co.uk/climatechange/story/0,,2025726,00.html>

³³⁰ ICCT (2007) Air Pollution and Greenhouse Gas Emissions from Ocean-Going Ships

For this to be effective we have to tackle the problem of the international regulation of shipping which has not kept up with the demands of today. It has been convenient for far too many participants – governments as well as the private sector – to maintain a system that moves slowly and is often ineffective. A future Conservative government should take the lead in reform. First, Britain should make it clear that the International Maritime Organisation has a duty to strengthen emissions standards for international ships in line with readily available technology. The IMO should produce a programme that would reduce those emissions to levels comparable with the standards expected of heavy goods vehicles. In the meantime we should seek to take the necessary action to control emissions in European waters as shipping transports 90% of all trade by volume to and from the EU-25. An incoming Conservative government should work within the EU to ensure that bunker fuel standards are enforced upon all ports in the EU so the low grade, high emission fuel is no longer available. We should take heart from the work done by Maersk to prepare for the imposition of such standards and co-operate with them and other progressive shipping lines to produce the speediest and most cost-effective solutions to this problem.

We should not underestimate the institutional difficulties of this course. The international regulation of shipping has roots deep in history and systems designed for another age. The increasing measurement of carbon footprints will help. Supermarkets and other powerful retail chains should be encouraged to use their powerful influence over their supply chains to insist that goods should only be carried in ships meeting the highest emission standards. Major manufacturers who outsource in such a way that they are dependent on sea transport should insist similarly. At a time when shipping is booming, we do not underestimate the complications such a policy will bring. Nonetheless a concerted effort, involving government, business, and NGOs, could well lead the IMO to take effective action. This would be the best solution and the commitment of the British government is crucial to its achievement.

There is no alternative to shipping for most intercontinental trade. Air freight is only an option for light-weight, high value goods and has extremely high environmental impacts – producing 10 to 60 times as much CO₂ per tonne kilometre as other modes.³³¹ Britain could afford to take the lead by setting higher standards for our own ports if the competitive disadvantages were offset by a sensible reconsideration of our attitude to light dues where, for historical reasons, we charge significantly more than continental countries and shoulder burdens which should be shared. A future Conservative government should not duck this issue.

Carbon emissions from waterborne transport vary significantly between the type of vessel and its size. Large ships have the lowest emissions per tonne kilometre of any freight mode including rail, and around four times less than small, inland vessels. In other words, it makes environmental sense for the UK to maximise the distance that incoming goods travel by water before transferring to rail or road.

A number of port industry commentators have questioned the analysis underpinning current government policy, the thrust of which is to focus port development upon the South East.³³² Using data on the final destination of imported goods containers, the Bristol Port Company has concluded that only 21% end their journey closer to the South East ports than to regional ports in the Midlands, North East and South West.³³³ This suggests that a sustainable distribution system would focus upon encouraging traffic through regional ports to minimise road or rail freight.

On the one hand, it is argued that developing port capacity for very large ships is futile beyond the South East – the rest of the country is not on a major international shipping route, and would be unlikely to attract very large vessels. On the other, the transshipment of goods from continental Europe

³³¹ CE Delft (2003) To Shift or Not to Shift

³³² House of Commons Transport Committee (2007) The Ports Industry in England and Wales

³³³ Bristol Port Co. (2006) Memorandum to House of Commons Transport Committee

could see smaller vessels dispatched around the coast of the UK. From an environmental perspective, the transshipment option is more attractive. Again, the development of ports and supporting transport infrastructure should be considered as part of the infrastructure plans described in Section 8.2.

The lack of an integrated ports policy has been exemplified by the separate planning consideration of developments at Harwich, Thamesport, and Southampton. There is no place in the present system for the consideration of sustainability or for the development of ports and supporting transport links which aim as far as possible to minimise freight mileage travelled overland. This will mean a greater focus upon ports outside the South East than is currently the case and **we urge an incoming Conservative government to instigate an urgent high level report on the contribution a ports policy ought to make to sustainability and the battle against climate change.**

The carriage of freight by inland waterways is limited compared to many continental countries. The narrow gauge of our canals has made it more difficult. **Nonetheless, we believe that there are opportunities to increase carriage by water and it is part of the remit of the new British Waterways to achieve this. In particular, the transfer of responsibility for the whole of the Thames to British Waterways should be accompanied by a remit to increase the use of the river for the carriage of freight.**

8.3.2.11. Air freight

Although air transport carries less than 1% of total UK trade by tonnage, it accounts for about a quarter in terms of value. Typically, air freight carries electronics, flowers, and vegetables. Although there is an increasing number of dedicated freight planes, the majority of the freight arrives in the hold of passenger aircraft, and the fundamental economic model is to integrate passenger and freight on the same service so there is limited scope for measures specifically aimed at airfreight. Nonetheless, its importance is clear, given that aviation is up to 60 times more carbon-intensive than other freight transport. The measures described in Section 8.5 of this Chapter, particularly the application of flight charges based upon emissions rather than passenger numbers, should go some way to controlling growth in this market. The increasing determination of supermarkets and their suppliers to minimise their carbon footprint will have a further direct effect.

8.3.2.12. Conclusion

Carbon emissions from road transport continue to rise as the proportion of passenger and freight trips made by car or lorry increases, despite a headline policy objective of decoupling transport growth from emissions. The management, reliability and pricing of the rail and bus industries are often raised as barriers to modal shift, but the truth is more nuanced. Some structural change is certainly justified to improve strategic thinking, boost efficiency and draw through investment. But there is also a need to create conditions that enable the use of public transport, cycling or walking. This means managing demand for car use, allocating more road space to non-car users, and more sustainable land-use planning patterns.

The biggest change will be one of perception. The challenge of building a truly integrated transport system needs to be addressed at all levels – the direction of public funding as well as the total amount; the provision of supporting infrastructure as well as new buses and trains; the spatial distribution of travel destinations and the psychology of transport choices.

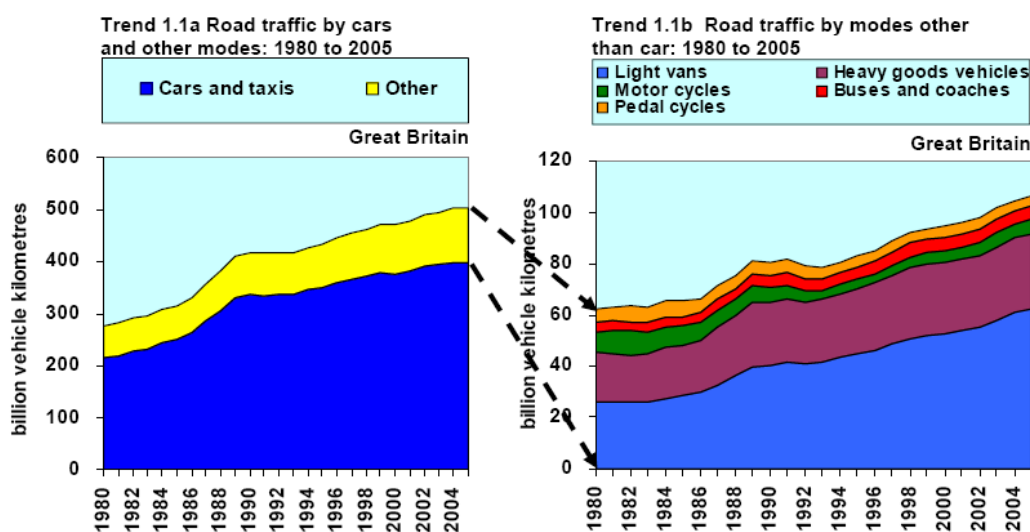
A future Conservative government should be marked by its broader understanding of the issues, its refusal to deal with transport in silos, and its willingness to be as innovative in the encouragement of children walking to school as it is in pressing the development of clean technology or lowering the emissions of trucks and buses.

Section 8.4. A Framework for Lower Carbon Motoring

8.4.1. Overview and objectives

The recent history of UK transport is characterised by an upward trend in the intensity of private motoring – as measured by distance travelled, time spent travelling, environmental impact, and congestion. The total distance travelled by road transport increased 82% between 1980 and 2005 to 504 billion vehicle kilometres. Four-fifths of that was car traffic. Between 1980 and 2005, the number of cars increased by 78% to 27.5 million and the average distance travelled is over 7,000 miles per person each year. Time spent travelling by car has increased to 235 hours per year. The proportion of trips made by car has risen to 64%, while the numbers of journeys by foot, local bus and cycle all fell.³³⁴

Figure 8.7. Growth in road traffic



Source: Department for Transport

However, the benefits of motoring are not felt by everyone – one quarter of households do not have access to a car either through choice or necessity. The old and the young are disproportionately disadvantaged by the loss of public transport occasioned by the growth in car ownership. The costs of car dependency are ever more obvious as measured in terms of carbon emissions and congestion, as well as in the less direct effects like the demise of local centres, the lack of healthy exercise, and the rising incidence of obesity.

Road transport is responsible for 24% of the UK's carbon emissions, a figure set to rise both in absolute terms and relative to other sectors. Cars account for four-fifths of this total and congestion is already estimated to cost the UK economy £15 billion each year in wasted time, rising to £22 billion by 2025.³³⁵

A majority of people believe government action is required to tackle transport emissions and congestion. Over half of people report urban congestion as a serious concern.³³⁶ Nine out of ten agree that the government 'should do more to persuade people to buy more fuel-efficient cars' and over 60% say it 'should do more to stop people driving more polluting cars'. Over 40% disagree with the

³³⁴ DfT (2007) Transport Trends

http://www.dft.gov.uk/162259/162469/190425/Trends_2006_FINAL_v5.pdf

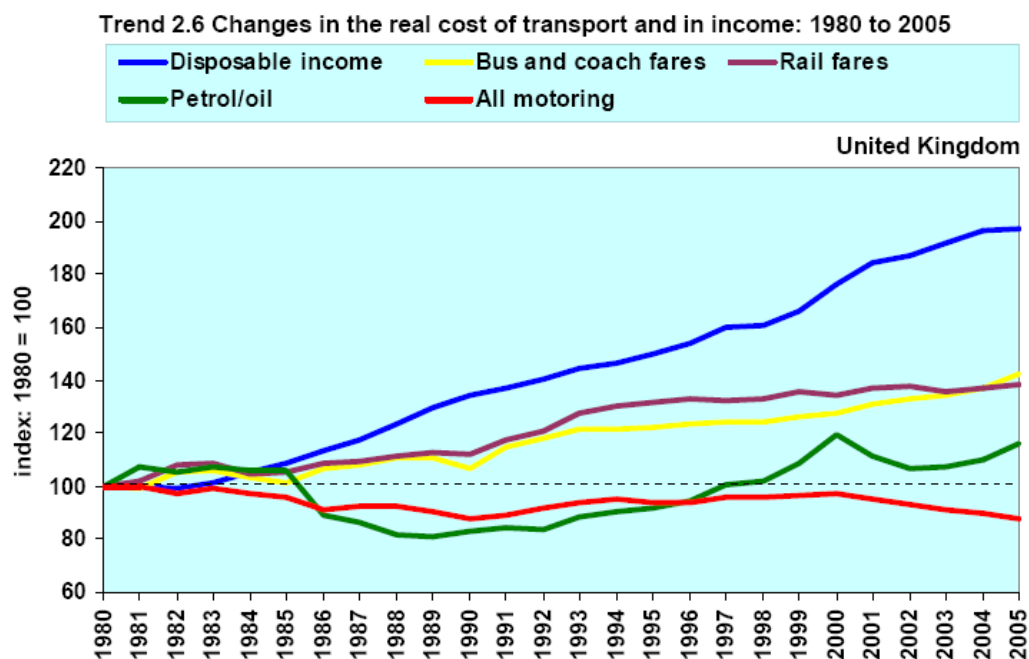
³³⁵ Blair letter to petitioners

³³⁶ REF British Social Survey quoted in Trans Trends

statement that ‘people should be allowed to use their cars as much as they like, even if it causes damage to the environment’, although 30% agree.³³⁷

It is not surprising that there is both a high level of comprehension of the problem and a good deal of confusion about the solutions. The signals are confusing and the psychology complex. At its simplest, current pricing produces distortion. Real terms disposable incomes have nearly doubled since 1980, but in real terms the overall cost of motoring has remained at or below 1980 levels thanks to cuts in the cost of car purchase, insurance, and maintenance. Over the same period, bus and coach fares have increased 42% and rail fares by 39% (see Figure 8.8).³³⁸ Pricing apart, cities designed with the car in mind have made trains, buses, walking and cycling less attractive options.

Figure 8.8. Changes in transport costs



Source: Office for National Statistics

Many car trips could be completed by lower carbon alternatives. Section 8.3 explored some of the policies and investment needed to make these alternatives more appealing. The Section looks at using the tax system to slow down and ultimately reverse emissions growth in the road transport sector. This encompasses measures to reduce the carbon intensity of individual vehicles, as well as encouraging modal shift and reducing growth in overall mileage driven by car.

8.4.2. Policy proposals

8.4.2.1. EU regulation of car emissions

Producing 169g CO₂ per kilometre, the average new car sold in the UK is the fourth most polluting of any EU member state. Much cleaner cars are technologically possible without compromising safety, comfort and performance. Indeed, the most fuel efficient cars on the market today emit closer to 100g CO₂ per kilometre and over 30 models on sale in the UK emit less than 120g.³³⁹ Cleaner cars make sound economic and political sense too, reducing fuel costs and dependency on oil imports. Reducing

³³⁷ DfT (2005) Attitudes to Climate Change and the Impact of Transport

³³⁸ DfT (2007) Transport Trends

³³⁹ Vehicle Certification Agency website

<http://www.vcacarfueldata.org.uk/information/how-to-use-the-data-tables.asp#petrol>

average new car emissions from today's 162g to 120g would cut Europe's oil bill by 20 billion euros a year.³⁴⁰

We note the failure of the voluntary agreement between car-makers and the European Union. The manufacturers signed up to a deal under which average new car emissions were to decrease to 140g by 2008. They have not delivered and emissions have fallen at nothing like the rate needed. This has done significant damage to the prospect of voluntarism and the willingness of the UK industry to excuse the failure has been a particular disappointment. The EU has recently proposed regulatory action on fuel efficiency, with a target of 120g by 2012; improvements in vehicle technology would be required to reduce emissions to no more than 130g, while complementary measures such as biofuels and more efficient air conditioning systems would contribute a further saving of 10g per kilometre.

The industry has of course raised concerns over compliance costs but experience shows that, when car-makers are required to implement new technology upon environmental or safety grounds, they raise the alarm and then, when forced, deliver in less time and at a lower cost than estimated. **The UK should therefore strongly support negotiations of a binding 120g by 2012 target for reducing carbon emissions from passenger cars. We note the long lead-in times for developing new vehicle models and the high costs involved. In order to offer the industry greater certainty with which to plan for the future, we recommend that an incoming Conservative government adopts an emissions target for new cars of between 80g and 100g by 2020.** This target is merely a continuum of the downwards trajectory envisaged by the EU's current proposal, which would see emissions reduced by 4 - 5% a year to 2012. Continuing this reduction path yields emissions of no more than 100g per kilometre by 2020.

Finally, we note that the majority of car advertising is for more polluting vehicles. A recent survey found that nearly six in ten car adverts in the UK press were for vehicles in the two most polluting VED categories, and only 3% for the cleanest cars.³⁴¹ The European Commission is currently inviting car-makers to sign up to an EU code of good practice on car marketing and advertising.³⁴² Car adverts and vehicle sales forecourts are currently required to display emissions information, but too often this information is poorly visible or absent altogether. The point of sale is the one moment above all others when customers seriously consider fuel efficiency and therefore the UK government should take an international lead in developing a code of practice on car advertising that promotes the purchase of lower carbon vehicles. In it, more prominence should be given to fuel economy in advertising and at the point of sale. **An incoming Conservative government should learn from the current regulation of cigarette advertising and require a designated proportion of advertising space to be given over to fuel economy information.**

8.4.2.2. A cleaner car fleet – purchase tax

Transport taxation should be designed to promote demand for fuel-efficient vehicles by new car buyers – in other words, the individuals and companies who ultimately determine the shape of the UK car fleet. There is significant variability in carbon emissions of new cars, both within and between different vehicle classes. For example, the most efficient large family cars emit around 154g CO₂ per kilometre, less than half that of the most polluting models, at 319g.³⁴³ Simply encouraging people to buy 'best-in-class' could have a considerable impact on carbon emissions.

³⁴⁰ Transport & Environment (2005) Cleaner is Cheaper

http://www.transportenvironment.org/docs/Publications/2005pubs/05-5_cars_cleaner_is_cheaper.pdf

³⁴¹ Friends of the Earth (2005) Press release: Government and Industry must do more on Greener Cars

³⁴² European Commission (2007) Press release: Commission plans Legislative Framework to ensure the EU meets its Target for cutting CO₂ emissions from cars

³⁴³ Figures from Environmental Transport Association car buyer's guide results for 'large family car'

<http://www.eta.co.uk/tools/car-buyers-guide.asp>

However, the UK's Vehicle Excise Duty system is failing to prevent highly polluting new vehicles from entering the fleet. This is unlikely to change, despite the government's announcement of a £400 rate for the top VED band – annual road taxes are of limited consequence to new car buyers, since they add a relatively small premium to the purchase price.

In contrast, an emissions-related tax directly at the point of purchase would increase the price differential between clean and polluting new cars more steeply. Such a tax could be phased in over time as automakers respond by bringing a greater range of efficient cars to market.

Examples of car purchase taxes

Purchase taxes payable on the registration of new vehicles are common in the rest of Europe. In most cases the tax rate is varied according to engine capacity or vehicle size, although increasingly purchase tax is being reformed to relate directly to carbon emissions.

In France, for instance, cars emitting more than 200g CO₂ per km pay an additional €2 in purchase tax for each gramme between 200 and 250g/km, and €4 for each gramme over 250g/km. In the Netherlands, the rate of purchase tax is reduced or increased according to the car's fuel efficiency compared to other cars of the same size. The cleanest cars attract a bonus of €1,000, while the most polluting pay a penalty of €540.

In Belgium, car purchase tax is graded finely according to the power of the car, and in Finland there is a reduction for low emission vehicles. In the Netherlands car purchase tax is 45.2%, coupled to fixed allowances that reduce the cost of efficient cars and raise the price of larger, less fuel-efficient vehicles. Denmark also has a high purchase tax. As well as a registration tax, Italy has two rates of VAT of 19% and 38% for different engine capacities. All these taxes work to lower the cost of small, efficient cars and increase the price of less efficient models.

As a result, Italy, Denmark and the Netherlands achieve higher average fuel economy than the UK, by 11%, 15% and 25% respectively. This result is particularly notable for Italy, where fuel is significantly cheaper than in the UK.

Sources: Potter and Parkhurst (2005), ACEA (2007)³⁴⁴

Evidence suggests that a tax on the initial purchase of a new car strongly influences vehicle choice.³⁴⁵ However, the UK currently lacks this specific measure, which is used successfully in most of the other European states. **We therefore propose that a future Conservative government should introduce a graded purchase tax of 0% to 10% on new cars, graduated according to emissions, or gCO₂/km, and accompanied by variable VAT between 5% and 17.5%.**

³⁴⁴ ACEA (2007) Overview of CO₂ based Motor Vehicle Taxes in the EU

³⁴⁵ Potter, S. (2006) Presentation to QoL working group

8.4.2.3. A cleaner car fleet – Vehicle Excise Duty

Annual circulation taxes such as VED are poorly placed to sway new car purchase decisions, and would require draconian increases to do so. It is estimated that a VED differential of £1,500 or more would be required to shift new car purchase decisions significantly in favour of cleaner vehicles.³⁴⁶

The introduction of a purchase tax would obviate this. We recommend more modest changes in VED, aimed primarily at influencing the used car market where annual running costs comprise a larger proportion of total costs. These levels of VED may also lead to slower depreciation rates for cleaner cars, thus indirectly influencing new purchase decisions. On this basis we propose increasing the VED differential between the top and bottom bands of emissions performance, capped at a maximum of £500.

The granularity of the existing VED structure, in which taxable bands increase in increments of no more than 40g CO₂ per kilometre, ceases for the top ‘G’ band, under which all cars over 225g pay the same. An extra charge should be introduced for the carbon produced by the top-emitting vehicles, which can range up to 400g and we would therefore create a new ‘H’ VED band for super polluters above the existing A-G range, starting at 300g CO₂ per km.

³⁴⁶ House of Commons Environmental Audit Committee (2006) Reducing Carbon Emissions From Transport <http://www.publications.parliament.uk/pa/cm200506/cmselect/cmenvaud/981/981-i.pdf>

8.4.2.4. A cleaner car fleet – capital grants

Increasing the costs of more polluting vehicles would help to counter-balance the premium charged by manufacturers for cleaner technologies such as hybrid engines. **But an incoming Conservative government should go further and bring in measures to stimulate the market for fuel-efficient cars overall. We propose the reinstatement of modest capital grants towards the purchase of low-carbon new vehicles. Eligibility for grants should be decided according to carbon emissions and subject to vehicles meeting minimum standards for air pollutants.**

8.4.2.5. Fleet procurement – private sector

Around half of new cars sold in the UK each year are registered by companies. Since April 2002, company car taxation has been calculated on the basis of the vehicle's carbon emissions and price. Because fleet purchasers are highly responsive to price changes, this reform has been effective in increasing demand for more fuel-efficient vehicles. Data suggests that in 2004, average CO₂ emissions from company cars were 15g per kilometre lower as a result of the reforms.³⁴⁷

We propose therefore the continuation of the company car tax scheme, gradually reducing the emissions levels associated with each tax band.

8.4.2.6. Fleet procurement – public sector

With well over 300,000 passenger and commercial vehicles, the public sector operates the largest fleet in the UK. Government departments and agencies should purchase clean cars to demonstrate leadership and increase the market for more fuel efficient vehicles. The government has adopted a target of reducing carbon emissions from vehicles in the central government estate by 15% between 2005 and 2010.³⁴⁸ However, this target lacks a practical delivery strategy, and does not cover procurement by local government.

The public sector spends around £2.2 billion on fleet and related activities every year, and stands to make fuel cost savings as well as emissions cuts through the purchase of cleaner cars. **An incoming Conservative government should therefore adopt a clean car procurement policy across central government, and give incentives for local government also to implement a delivery strategy and effective monitoring. An incoming Conservative government should also explore the possibility of international fleet buying consortia with other EU governments and agencies.**

8.4.2.7. Road user charging

We need to be clear about the purpose of the proposed national road user charging, a concept that has generated much confusion. Road user charges varied by type of road and time of day are predominantly a tool for managing traffic congestion, not for reducing carbon emissions. Indeed, the 2004 Transport White Paper conceded that the most cost-effective means of reducing transport emissions would be measures affecting the cost of fuel and the price of energy efficient vehicles.³⁴⁹

Further, road user charging could have perverse effects that would actually increase transport emissions by encouraging drivers to take less direct routes, avoiding high-charging roads. In this

³⁴⁷ HM Revenue & Customs (2006) Report on the Evaluation of the Company Car Tax Reform <http://www.hmrc.gov.uk/budget2006/company-car-evaluation.pdf>

³⁴⁸ Sustainable Development.gov.uk (2006) <http://www.sustainable-development.gov.uk/government/estates/targets-guidance.htm#vehicles>

³⁴⁹ DfT (2004) Transport White Paper

model, traffic simply spreads out in time and place with little reduction in total mileage. As a strategy for reducing emissions national road user charging looks very poor value.

There are also very reasonable concerns that road user charging could shift activity patterns from high charge to low charge areas, turning what is currently an acute problem (of too much traffic in specific places at certain times) into a chronic problem afflicting a wider area, more of the time.³⁵⁰ This would increase travelling distances, so acting against policies for sustainable land-use planning.

Another reservation is the lengthy timescale (at a minimum ten years) associated with a national scheme, which does not reflect the urgency of tackling congestion or emissions growth. Additionally, the very high costs of a national scheme – between £10-£62 billion to set up, and £5 billion a year to run³⁵¹ – are not justified by the extent of congestion in the national road network.

We would therefore replace the concept of national road user charging with simpler adjustments to the price signal designed specifically to reduce transport emissions. This is in line with our general approach that we should seek simple and transparent ways to achieve our ends and avoid grandiose schemes that rely on unproven technology and huge investment. The need to act on climate change is too urgent and the investment cost of climate change mitigation is going to be high enough anyway without adding to it unnecessarily.

The case for road user charging is stronger on urban roads suffering acute congestion, where charging helps ration a scarce resource – although even here, straightforward traffic management initiatives can offer cost-effective alternatives, including controlling the supply of parking spaces, park and ride, pedestrianisation and bus priority lanes. Local authorities should have the freedom to pursue congestion charging schemes where they see fit, after due consideration of other means of alleviating acute congestion.

8.4.2.8. HGV road user charging

The case for road-user charging in the HGV sector is rather stronger than for passenger cars. First, the high price of fuel in the UK compared to continental Europe means that British hauliers have higher operating costs than competitors arriving with cheap fuel from overseas. The freight industry has supported the development of a distance-based lorry road user charge for this reason, since it would apply to all operators irrespective of where they buy fuel. Second, the average freight vehicle does more damage to road surfaces than the average car – providing some justification for a distance-based charge. Finally, the small number of HGVs relative to passenger cars implies a much lower cost and lead-time than for a universal scheme.

The UK government went a considerable way towards introducing a lorry road user charge, only to drop the proposal in July 2005. The scheme would have covered all UK roads and all vehicles over 3.5 tonnes, with a distance-based charging structure potentially varied so that heavier and more polluting lorries pay more. The charge would have been offset by reductions in fuel duty. Germany, Austria and Switzerland have all implemented lorry road user charges, although charges cover only motorways in Germany and Austria. As well as offering domestic and overseas hauliers a level playing field, these schemes have reduced freight carbon emissions by incentivising efficient logistics and modal shift to rail. In the first year of the German scheme, for instance, 23 billion lorry kilometres were charged, and the Government reported a 7% shift from road to rail and a 15%

³⁵⁰ Campaign to Protect Rural England, quoted in House of Commons Transport Committee (2005) Road Pricing: The Next Steps

³⁵¹ DfT (2004) Feasibility Study of Road Pricing in the UK: Annex J

<http://www.dft.gov.uk/pgr/roads/roadpricing/feasibilitystudy/studyreport/annexjcosts>

decline in empty running by HGVs.³⁵² The Swiss charge – which is varied by distance, weight and emissions – has been credited with a shift in the vehicle fleet from high to low emission vehicles.³⁵³ The UK should look to replace fuel duty for HGVs with an HGV road user charge to capture the environmental and economic costs of road freight, and create consistent pricing across the haulage industry, irrespective of where fuel is purchased.

8.4.2.9. Fuel duty

A number of factors have an impact on the likely future pattern of vehicle related emissions. Improving land-use planning, supporting the use of trains, buses and cycles, spreading the use of travel-reducing technologies such as video-conferencing, and growing the market for cleaner cars through fiscal and regulatory means will all contribute to reducing emissions. Against that, predictions of the growth of car ownership and trip length suggest that there can be no guarantee that the implementation of all the measures we recommend will necessarily produce the required reduction in emissions.

With that very much in mind we are not recommending regular increases to fuel duty over and above inflation at this time.

We note that fuel consumption is a reasonably direct proxy for tailpipe carbon emissions and that fuel demand elasticity studies suggest that the tax increases resulted in 10% less demand for fuel in 2000 than if duty rates had only increased at the same rate as inflation.

We should also note that critics have questioned whether a resumption of stepped duty increases would in fact moderate demand for fuel. The recent spikes in forecourt prices do not appear to have precipitated a significant drop in demand, and suggest that motorists will sometimes absorb quite significant cost increases without reducing fuel usage.

8.4.2.10. Biofuels

Concerns over climate change and energy security have sparked a number of policies for promoting the use of biofuels in transport. However, the current generation of biofuels crops pose considerable sustainability threats of their own, including tropical deforestation and competition with food crops for available land. Even to make a limited inroad into the demand for petroleum requires a significant land take. It is suggested that, if the US were to grow corn on every reasonably available acre of land and turn all the product into ethylene, it would still only provide 12.5% of America's demand for liquid fuel. If proper account were taken of the necessary added inputs derived from fossil fuels, that figure would fall to 2.5%.

Although biofuel has so far replaced only a fraction of one percent of transport fuel demand (0.25% in the UK), its production has been part of the reason for soaring world grain prices.³⁵⁴ Subsidy encourages less than optimal use of land and the replacement of beneficial rotation of crops with a mono-culture dependent upon fossil fuel based artificial fertiliser. Resultant pressure on food prices has a disproportionate effect on developing countries where so much higher a proportion of disposable income is spent on food. In the US it is under 6% while in Indonesia it is over 50%.

The carbon savings associated with biofuels are also highly variable according to the energy they take to grow, process and transport. The best performers produce only around 20% as much greenhouse gas

³⁵² TransFORM Scotland (2007) Toll Collect: Germany's road pricing system for road freight http://www.transformscotland.org.uk/info/docs/2007-03-22_Toll_Collect.pdf

³⁵³ CfIT (website accessed June 2007) Road Charging Scheme: Europe, Switzerland <http://www.cfit.gov.uk/map/pdf/europe-switzerland.pdf>

³⁵⁴ FAO (2006) Food Outlook: Global Market Analysis <http://www.fao.org/docrep/009/j8126e/j8126e01a.htm>

as conventional petroleum, but the worst may be even more carbon-intensive than conventional fuel.³⁵⁵ So-called second generation biofuels, derived from forestry and other wastes, offer a better carbon and sustainability profile, but may be 10 years away from commercial development.³⁵⁶

Policy should stimulate production of low-carbon intensity biofuels, not simply the volume of biofuels. Although there are planned improvements, at present the UK's Renewable Transport Fuel Obligation does not do this, setting a volume target of 5% of all road vehicle fuel to be supplied from renewable sources by 2010. A more promising approach is represented by a proposed review of the 1998 EU Fuel Quality Directive, which would require the climate impact of road fuels, per unit of energy, to decrease 10% by 2020.³⁵⁷ Even here, it is important not to be prescriptive in order to favour particular lobbies determined to use the mitigation of climate change to deliver their own agenda as growers of particular crops or manufacturers of particular systems. The objectivity of carbon measurement is crucial.

In the UK, the certification of biofuels under the RTFO should be linked directly to environmental and sustainability impacts as soon as possible, moving from a volume-based to a quality-based approach. Within the EU, the UK should support moves to impose targets for the decarbonisation of transport fuels overall, encompassing mineral oils as well as biofuels.

8.4.2.11. Parking

Knowledge of whether or not there is somewhere to park at the end of a car journey can determine whether that journey is made by car or an alternative mode. Suitably restricting parking places, through taxes and land-use planning, would encourage modal shift among drivers who do not respond to other direct price signals.

We therefore recommend bringing private non-residential off street parking space into the tax system and taxing it accordingly. We would exempt single car parking spaces outside small businesses or those premises in mixed use. Local authorities could however offer relief on business rates for companies who convert town centre car parking space to other uses such as document storage or supplementary office use. This could be combined with a proposal to allow local authorities to insist on retailers charging for car parking, particularly in out-of-town shopping centres, supermarkets, and outlet stores with the proceeds being applied to bus provision and other environmental, carbon saving objects.

8.4.2.12. Conclusion

The costs of motoring have consistently fallen in real terms and as a proportion of average household expenditure. However, many car users feel they get a poor deal. The reasons for this need to be unpacked. They may relate as much to frustrating driving conditions, caused by rising traffic volumes, as to the price per se. It is also conceivable that people would be willing to accept pricing changes if they felt there were reasonable alternatives to car use. The positive consequences of changes to motoring taxes needs to be explained far more clearly than in the past and the changes must be seen as part of a new approach which is genuinely to replace taxes not increase them.

Transport taxation should aim to reduce the total distance driven and boost the fuel efficiency of individual vehicles. Neither of these aims are well addressed within the current system, either because the tax signal is inadequate or in the wrong place. A more workable system is described here, which

³⁵⁵ Sustainable Development Commission (2006) SDC response to the DfT on Biofuels and the RTFO

³⁵⁶ Shell website (25/03/07) The Energy Challenge

<http://www.shell.com/biofuels>

³⁵⁷ European Commission (2007) Stricter Fuel Standards to Combat Climate Change and Reduce Air Pollution
<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/120&format=HTML&aged=0&language=EN&guiLanguage=en>

should be implemented in concert with the changes to land-use planning and provision of integrated transport described in other Sections of our Report.

Section 8.5. Putting Aviation on a Sustainable Footing

8.5.1. Overview and objectives

Demand for aviation is rising dramatically. Air travel through the UK has increased five-fold over the last 30 years, and official government projections suggest it will double or triple again by 2030.³⁵⁸ This is based on a 4% increase in passenger numbers every year, fuelled by a 40% decrease in fares in real terms over the period. Already emissions from UK aviation, both domestic flights and international departures, contribute 5.5% of the UK's CO2 emissions.³⁵⁹

Aviation's contribution to global climate change is often cited as less than 3%. However, this refers only to carbon dioxide. Water vapour and nitrogen oxides emitted at high altitude in fact boost the greenhouse impact of aircraft by a factor of 2 to 4. The true contribution of air transport to global warming is already somewhere between 4 and 9%. This is because air travel is a uniquely greenhouse-gas-intensive mode of transport. Over a single journey of 1,500km, an aircraft emits twice as much greenhouse gas per passenger kilometre than a high speed train. Shorter journeys produce even higher emissions per kilometre. Over a 500km trip, aircraft emit six times more greenhouse gas than high speed trains and 12 times more than a coach.³⁶⁰

Aviation emissions in the UK are rising faster than from any other major sector, increasing 90% between 1990 and 2004. Over the same period emissions from manufacturing dropped 28% and emissions from electricity, gas and water supply fell 15%.³⁶¹ The Government's own figures (see Figure 8.9.) indicate that aviation emissions are likely to increase from 8.8 MtC in 2000 to around 17 MtC by 2050 – and this is a best case scenario assuming available and timely introduction of new technologies.³⁶²

Figure 8.9. Projected growth in aviation emissions (domestic and international departures), assuming efficiency gains in aircraft technology and air traffic control

Year	Carbon emissions (Mt)
1990	4.6
2000	8.8
2010	10.8
2020	14.9
2030	17.7
2040	18.2
2050	17.4

Source: DfT 2004

If the UK meets its present target of reducing overall carbon emissions 60% by 2050, aviation will then account for more than a quarter of the total carbon budget, and other sectors will be asked to make deeper emissions cuts to compensate. Some studies suggest unconstrained growth in aviation could account for more than 100% of the nominal carbon budget by 2050.³⁶³ Allowing one sector to

³⁵⁸ DfT (2003). The Future of Air Transport

³⁵⁹ DfT (2004) Future of Transport

³⁶⁰ CE Delft (2003). To Shift or Not to Shift: The environmental performance of the principal modes of freight and passenger transport

http://www.ce.nl/eng/pdf/03_4360_09.pdf

³⁶¹ National Statistics (2006) Environmental Accounts, Spring 2006. [Data from Table 2.3 pg27]

http://www.statistics.gov.uk/downloads/theme_environment/EAMay06.pdf

³⁶² DfT (2004) Aviation and Global Warming

<http://www.dft.gov.uk/about/strategy/whitepapers/air/docs/aviationandglobalwarmingreport>

³⁶³ Tyndall Centre (2005) Growth Scenarios for EU and UK Aviation: Contradictions with Climate Policy, Report for Friends of the Earth

increase emissions rapidly while seeking cuts from every other sector raises serious issues of equity and practicality. Clearly, the Government's policy of actively encouraging aviation growth is at odds with the UK's commitment to tackle climate change.

Our objective is to reduce emissions growth from aviation, and in doing so, head off air-dependent lifestyles facilitated by cheap flights, based upon second homes abroad or even international commuting. Once established, these patterns will be difficult to undo – in this we can draw a cautionary tale from predict and provide policy towards road capacity, which has contributed to widespread car-dependency.

Turning to the economics of aviation, we note that the sector is lightly taxed compared to other industries and private modes of transport. Aircraft fuel is exempt from fuel duty and air tickets are VAT free, reducing Treasury revenues by around £9 billion a year.³⁶⁴ These indirect subsidies flatter the economic case for airport expansion and stoke demand growth by decreasing the cost of flying. Such preferential treatment is not warranted in a mature sector.

Technology should be used wherever possible to reduce the carbon-intensity of air travel. Improvements in operations management offer the most promising source of greenhouse gas savings. For example, UN IPCC estimates that there is a 12% inefficiency in air traffic management globally, adding up to 73 million tonnes of wasted CO₂ emissions per year as planes queue and circle unnecessarily.³⁶⁵

Unfortunately, the technological potential with regard to developing cleaner aircraft and fuels is much more limited.³⁶⁶ The Advisory Council for Aeronautics Research in Europe sets an objective of cutting CO₂ emissions by 50% by 2020, but admits this requires “novel concepts” and putting “breakthrough technologies into commercial service”.³⁶⁷ However, the reality of innovation in aircraft design is of incremental improvement not radical innovation, due to the high cost and risk of developing new airframes. Only very modest efficiency gains are likely to be delivered, at least on a timescale compatible with the urgency of averting dangerous climate change.

This leads us to conclude that some form of demand management is inevitable if the growth in aviation is to be squared with action to cut greenhouse gas emissions.

8.5.2. Policy proposals

8.5.2.1. Recording aviation emissions

Current policy does not reflect the true external environmental costs of aviation and projected growth is incompatible with meeting domestic and international targets for reducing greenhouse gas emissions. Further, the true extent of air travel's contribution to climate change is routinely underestimated, since national greenhouse gas inventories do not count emissions from international flights when used as a basis for policymaking.

http://www.tyndall.ac.uk/publications/working_papers/wp84.pdf

³⁶⁴ Aviation Environment Federation (2003) The Hidden Cost of Flying

<http://www.aef.org.uk/downloads/HiddenCost.pdf>

³⁶⁵ International Air Transport Association (2007) Every Minute Counts

<http://www.iata.org/pressroom/pr/2007-02-13-02>

³⁶⁶ RCEP (2002) The Environmental Effects of Civil Aircraft in Flight

<http://www.rcep.org.uk/avreport.htm>

³⁶⁷ ACARE (2004) Strategic Research Agenda

<http://www.acare4europe.org/docs/ASD-exec%20sum-2nd-final-171104-out-asd.pdf>

We should therefore ensure that international aviation is incorporated into national emissions inventories as a matter of urgency so that policy-making can proceed on a more accurate and complete basis.

8.5.2.2. Cleaner aviation technologies

There are a number of ways in which aviation fuel burn could be significantly reduced that could be implemented without massive technical innovation. Air traffic management reforms and towing aircraft to the runway can reduce emissions. The industry should be encouraged to explore more innovative solutions too, such as completing long distance air travel in multiple stages – an aircraft travelling 4,000km is 40% more efficient than one travelling 15,000km non-stop.³⁶⁸

Aviation logistics and operations should be improved to reduce fuel burn, including the reform of national and European air traffic management. It is surely unacceptable that a flight from Glasgow to London will spend more time in a holding pattern over the capital than it will making the journey south. It cannot be beyond the wit of man to devise software which would allow air traffic controllers only to authorise push back from domestic or near European airports when they are clear that the aircraft will be able to travel directly to its destination. **The British Government should take the lead in seeking this and other initiatives. The industry should be encouraged to make other carbon savings by minimising ground movements, through a voluntary code of conduct. The closed nature of an airport makes it an ideal site for new forms of low-carbon technology, including fuel cells. Airports should be encouraged to view themselves as test-beds for such development on the ground to compensate for their manifest difficulty in reducing levels of pollution in the air. Ministers in an incoming Conservative government should work with industry representatives to ensure that a radical programme of reform is in place within two years and should stand ready to legislate if the preferred voluntary agreement does not deliver.**

8.5.2.3. Offset schemes

We note the popularity of carbon offsets, which are offered by increasing numbers of airlines as a means of neutralising the impact of flying. We also note the low cost of offsets – just £9.43 for a return flight to New York.³⁶⁹ Unlike a tax, voluntary offsets provide no incentive to reduce aviation demand, and may well encourage flying among sections of the population who otherwise feel guilty about climate impacts. Poor quality offsets that offer incomplete, unverifiable carbon savings over a lengthy timescale are no substitute for reducing growth in air travel demand.

Aviation offsets should be subject to the development an accreditation scheme based upon sustainability and additionality. In public policy, offsets should not be allowed to substitute for measures to moderate demand for air travel. It is important that individuals should be aware of their carbon footprint and for that reason all airline tickets should be required to display detailed information on emissions associated with individual journeys according to a standard format.

8.5.2.4. Emissions trading

The rapid increase in aviation emissions, lack of technological fixes and the sector's privileged tax status justify the introduction of measures to control demand growth. We welcome the proposed inclusion of aviation in the EU Emissions Trading Scheme from 2011 for intra-EU states, and from 2012 for all international flights using EU airports. However, current proposals for an expanded EU ETS raise serious doubts that it will curb the rise in aviation emissions. Specific issues raised by the House of Commons Environmental Audit Committee and others include the level of cap set for

³⁶⁸ Air Travel – Greener By Design (2005) Mitigating the Environmental Impact of Aviation

³⁶⁹ Calculated on 7 March using <http://www.climatecare.org/britishairways/index.cfm>

aviation emissions, whether aviation emissions are traded openly with other sectors or within a closed scheme, and the extent to which aviation allocations are auctioned. The European Commission estimates that including aviation in the EU ETS will reduce projected air travel growth by only 0.1 percentage points, and add a mere €1.8-9.0 to the price of a return flight within the EU. This price signal is clearly too weak significantly to influence demand growth.³⁷⁰ Moreover, the proposals are a number of years away from implementation, and do not account for the non-CO2 global warming impacts of aviation emissions.

Aviation is a heavily polluting, fast-growing sector with severely limited potential for technological mitigation. According to economic theory, these characteristics argue in favour of including aviation in emissions trading schemes via an open system. But to do so raises the risk that other sectors will have to reduce emissions disproportionately to accommodate aviation growth, with inflationary effects on the price of carbon. It is not difficult to see how such an approach might raise problems of social equity, for instance if aviation emissions were to drive up the price of heating millions of homes.

The UK should advocate more stringent terms for bringing aviation into the EU ETS including the auctioning of permits, and a firm cap for aviation emissions within an overall policy that recognises the sector's non-CO2 global warming impacts.

8.5.2.5. Unilateral measures – Air Passenger Duty

Although the EU ETS offers the appealing prospect of international cooperation, it does not constitute the fast or effective action framework needed to manage aviation demand. This opens a case for the UK to pursue unilateral policies alongside international agreement.

The UK's existing Air Passenger Duty is poorly suited to tackling the environmental impacts of aviation. As a per-passenger tax, it is not directly related to emissions and provides no incentive to airlines to boost efficiency by investing in cleaner aircraft or increasing seat occupancy rates. Further, APD excludes air freight, which is growing even faster than passenger traffic, at a rate of around 7% per year³⁷¹. Government figures indicate that air freight accounted for 6.9% of UK aviation emissions in 2000, forecast to rise to 10% in 2030³⁷².

APD should be reformed as a per-flight rather than per-passenger charge for both passenger and freight aircraft, to reflect emissions more closely and to introduce a stronger incentive to fill empty seats. We recommend stepped annual increases in APD.

8.5.2.6. Unilateral measures – fuel duty

Charging fuel duty on domestic flights is another option. Fuel duty is a direct proxy for aircraft emissions, but fuel used on international flights is exempt from tax under numerous bilateral Air Service Agreements related to the 1944 Convention on International Civil Aviation (the 'Chicago Convention'). ASAs between EU states have been superseded by EU Community Law since 1993, and the 2003 Directive on Taxation of Energy Products enables member states to introduce fuel tax for domestic flights. Norway and the Netherlands have introduced such a tax, as have a number of US states.

³⁷⁰ (ENDS, 2007a)

³⁷¹ Institute for Public Policy Research (2003) *The Sky's the Limit: Policies for Sustainable Aviation* <http://www.ippr.org.uk/publicationsandreports/publication.asp?id=193>

³⁷² DfT (2004) *Aviation and Global Warming* [Data in Section 3] <http://www.dft.gov.uk/about/strategy/whitepapers/air/docs/aviationandglobalwarmingreport>

8.5.2.7. Unilateral measures – VAT

The UK could also charge VAT on air tickets for domestic flights. Indeed, most of the EU-15 countries already do so. VAT is not currently payable on international or intra-EU tickets. However, the VAT 6th Directive makes this exemption optional, and states are free to charge VAT on the portion of a flight taking place in domestic airspace. This would be administratively complex, although the German Government came close to implementing such a measure in 2004³⁷³. It would be sensible to charge VAT upon domestic air tickets.

8.5.2.8. Price elasticity in aviation

Price elasticities in aviation

Price elasticities refer to the relationship between price and demand for a product or service. Demand is said to be elastic if a given change in price results in a more than proportionate change in demand, and vice versa. For example, if a 10% increase in the price of a product reduces demand for that product by 20%, demand is elastic. If a 10% price increase results in only a 5% demand drop, demand is relatively inelastic.

Price elasticities for aviation fares are complex, and vary significantly among flight categories, routes and journey motivations. For instance, demand for a particular flight is more likely to be elastic if that flight can be substituted by another mode or for another destination, or if the flight is discretionary. Demand is likely to be more inelastic if there is no substitute, if the air fare makes up a small proportion of the total trip cost, or if the flight is being made for non-leisure purposes.

Aviation price elasticities derived from different studies vary substantially. Most figures lie in the range -0.5 to -1.5, meaning that a 10% change in the cost of air travel could be expected to change demand by 5% to 15%. Existing studies do not appear to differentiate between demand for domestic and international travel – elasticities for domestic aviation should be elaborated before determining precise values for VAT and fuel duty on such flights.

Price elasticities also need to be set against changes in income and the cost of air fares, which are projected to decrease 1% per year in real terms until 2030. This implies that the level of any price increase used to constrain demand will also have to rise over time.

8.5.2.9. Alternatives to aviation

Around 100,000 of the 470,000 flights using Heathrow airport every year are to near-Europe destinations where there already exists a reasonable rail alternative, including Manchester, Leeds and Newcastle³⁷⁴. With high speed rail, Edinburgh and Glasgow would become even more accessible by overland transport. Transferring these journeys to rail implies significant carbon savings.

It will be necessary to improve railway capacity and management in order to make rail journeys a sufficiently attractive alternative to flying, in terms of price, speed and reliability. The necessary development of UK railways is discussed in Section 8.3. Domestic flights continue to be justified in serving remote communities in the Highlands and Islands or for completing cross-country routes that do not attract the passenger numbers to justify new rail capacity. We need, however to improve the alternative offering by providing the investment in the UK rail network which would reduce journey time between major cities to a level where rail becomes a reasonable, or preferred, alternative to domestic flights.

³⁷³ Sewill (2005) *Fly Now, Grieve Later: How to Reduce the Impact of Air Travel on Climate Change*, Aviation Environment Federation, London

³⁷⁴ HACAN (2006) *Short-Haul Flights: Clogging Up Heathrow's Runways*

Nor should we be concerned only with replacing flights within the UK. London to Paris, Lille, and Brussels are already rail journeys which compete well in time with flying. The fast link between St Pancras and the Channel Tunnel will improve times significantly as will the new link between Brussels, Rotterdam, and Amsterdam. These are all journeys which ought, in future, to be taken by rail and not air.

8.5.2.10. Airport capacity

The government plans to accommodate aviation growth from 180 million passengers per annum to 476 million by 2030, with new runways at Heathrow, Stansted, Edinburgh, and Birmingham and other extensions throughout the UK. This is essentially a policy of predict and provide – an approach that has been discredited as a means of managing the growth of road traffic, and is certainly not justified in relation to aviation.

Growth in demand is heavily concentrated in short-haul leisure flights taken by UK residents. Between 1994 and 2004, 70% of the additional international trips that occurred were UK residents going abroad for leisure. From the perspective of the UK economy, this is arguably the wrong sort of growth. Short-haul leisure flights exacerbate the country's tourism deficit – the difference between what overseas visitors spend in the UK and what British citizens spend abroad – which already stands at around £15 billion.³⁷⁵

Today, over half of all air trips arriving or departing UK airports are UK residents travelling for leisure, and this proportion is set to increase. Growth in business and long-haul leisure flights to the UK is much slower. Only 14% of UK flight movements are overseas residents visiting for leisure, and 22% are for business (including 5.4% on domestic flights).³⁷⁶

Scaling back airport expansion plans would lead to more efficient use of existing capacity, and accelerate the allocation of flight slots to parts of the market that value them most. This means reducing the rapid growth in short-haul flights with a shift towards the less price-sensitive business and long-haul leisure flights – the categories deemed most advantageous to the UK economy. It does not mean that there would be a diminution in the cheap flights already available but simply that their growth would be significantly curtailed. We would therefore have no need to expand airports in the way the Government proposes.

The tax regime, the improvement in alternative modes of transport, and the expansion of teleconferencing would be likely to dampen growth, while a fifth of the slots at Heathrow would potentially become available for longer haul flights where no alternative exists. There should therefore be no new runways at Stansted or Gatwick. More than a quarter of all flights from Heathrow are to destinations to which there is a practical rail alternative. Paris is the most popular destination with around 60 flights to and from Heathrow a day. There are more than 30 flights a day to and from Manchester, Edinburgh and Brussels. The arguments for the proposed regional runways should also be revisited and the effect of expansion on our carbon footprint factored into the equation before any go-ahead is given.

³⁷⁵ 2004 (Department for Culture, Media and Sport) Tomorrow's Tourism Today

<http://www.culture.gov.uk/NR/rdonlyres/73FDC3ED-BCA6-4323-A683-63C6FCF5F79B/0/TomorrowsTourismToday.pdf>

³⁷⁶ Environmental Change Institute (2006) Predict and Decide, quoting DfT data (2006)

There should therefore be a hold on all plans for further airport expansion in the UK while in each case such plans are tested against the challenge of climate change and in the context of a wider European agreement on the restriction of airport expansion. In this way the effect of expansion of our carbon footprint would be factored into the equation before any go-ahead on any of these projects is given.

8.5.2.11. Social aspects of aviation demand

Policies aimed at constraining rapid aviation growth are often characterised as being socially regressive by ‘pricing people off planes’ and penalising those who cannot currently afford air travel. However, an analysis of aviation demand suggests that additional capacity will mainly be taken up by wealthier frequent flyers, predominantly to short-haul destinations in the UK and Continental Europe, rather than being spread through the population as a whole.

Data on who is flying where supports the conclusion that a tax on aviation would not be regressive. For example, about half of the population do not fly in any one year, 80% of flights are taken by those in the top half of the income distribution, and the average income of leisure flyers is almost double the national average.³⁷⁷

The British Social Attitudes survey showed that in 2003, over half of those in semi-routine or routine jobs had not flown in the previous year, while nearly half of those in higher managerial and professional jobs had flown three or more times.³⁷⁸

Figure 8.10. shows that the wealthier AB socio-economic groups account for one third of outbound leisure traffic – seven percentage points higher than their combined share of the UK population. By contrast, the less affluent D and E groups are underrepresented, comprising 25% of the population but taking only 10% of the flights.³⁷⁹ The Civil Aviation Authority concludes that “the wealthiest and most professional groups take a disproportionately large number of leisure trips abroad”.³⁸⁰

³⁷⁷ Environmental Change Institute (2006) Predict and Decide: Aviation, Climate Change and UK policy, University of Oxford

<http://www.eci.ox.ac.uk/research/energy/downloads/predictanddecide.pdf>

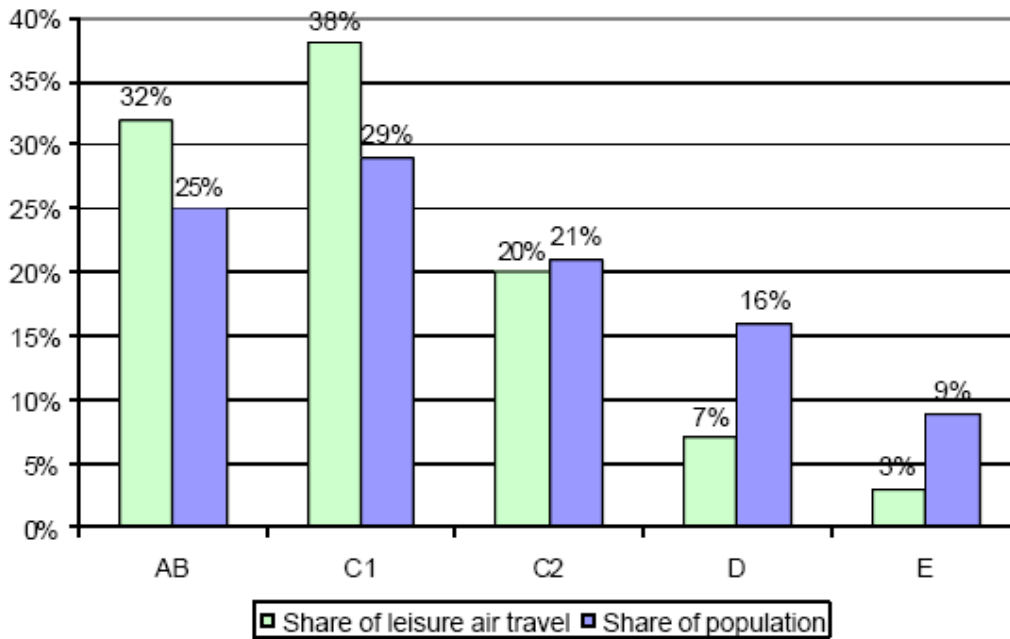
³⁷⁸ Cited in Environmental Change Institute (2006)

³⁷⁹ CAA (2005)

³⁸⁰ CAA (2005) Demand for Outbound Leisure Air Travel and its Key Drivers

<http://www.caa.co.uk/docs/5/Elasticity%20Study.pdf>

Figure 8.10. Leisure trips abroad by socio-economic status



Source: CAA and Mintel

Survey data suggests that other costs such as accommodation are a more important limiting factor than the affordability of air travel for lower income groups.³⁸¹ Meanwhile, opinion polls suggest that the general public is prepared to support policies to slow down air travel growth, with 59% in favour of taxes on airlines to reflect environmental effects, even if it means higher air fares.³⁸²

8.5.2.12. Private business flying

The growth in executive jets and the use of private planes by businessmen and celebrities is one of the fastest in the aviation sector. Clearly, this is a poor use of carbon and a future Conservative government should ensure that the taxation consequences of such flights should fully mirror the carbon costs. In particular, none of the costs of private jets should be allowable against taxation.

Although the Prime Minister and Party leaders will inevitably need to fly around the UK, other Ministers should exclude private flights except in the case of extraordinary circumstances.

8.5.2.13. Conclusion

The data described above contain a number of important lessons for aviation policy. First, some of the large proportion of aviation growth represented by short-haul flights can feasibly be transferred to rail. Second, unconstrained growth in short-haul aviation is creating air-dependent lifestyles and increasing the UK's tourism deficit. Third, limiting aviation growth is unlikely to price poorer people off planes. Finally, short-haul dominated demand growth can be constrained without damaging the business and long-haul leisure markets of most benefit to the economy. These add up to compelling arguments for developing policy to reduce growth in emissions from air travel.

³⁸¹ Graham A (2006) Have the major forces driving leisure airline traffic changed? Journal of Air Transport Management

³⁸² MORI poll for Airfields Environment Trust (2006) Climate Change and Taxing Air Travel

<http://www.aef.org.uk/downloads/morir.doc>

