Towards Transport Justice

Transport and Social Justice in an Oil-Scarce Future

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1. Executive summary

1.1. Socially unjust consequences of carbon-intensive transport

During the last half-century, our towns, suburbs and countryside have been re-shaped as a consequence of mass car ownership, made possible by fuel sold at the pumps for roughly the price of mineral water.

Injustice is experienced by millions of people in the UK who do not have a car, or struggle to afford one, in the 'must-have-car' society which we have created. These injustices include difficulties accessing work and other opportunities; enforced indebtedness; reduced opportunity to lead an active healthy life; and, ironically, proportionately greater exposure than average to pollution, road danger and noise caused by those who do have a car.

- Two out of five jobseekers say lack of transport is a barrier to getting a job[1]. For young people, inaccessibility of work is cited as the most common obstacle to getting employment[2].

- Amongst the poorest fifth of households, those who do own cars spend nearly a quarter of their income on the cost of motoring[3]. A family is officially defined as suffering 'fuel poverty' if heating their house costs more than 10% of their income[4]. Although there is no similar official definition of 'transport poverty', that is what these families are experiencing.

- Although they are least likely to own a car, disadvantaged households are also more subject to what the Government's Foresight programme terms an 'obesogenic environment', which includes reduced opportunities to travel actively by walking or cycling. The Foresight analysis predicts that a majority of UK adults could be clinically obese by 2050, at an annual cost to society of £49.9 billion in today's money[5]. It points out that those who are already disadvantaged are more likely to suffer obesity and the considerable problems associated with it, including cardiovascular disease and stroke.

- Despite owning the fewest cars, the poorest households are the most exposed to death or injury by cars, and this is especially true of children[6].

1.2. Worse inequalities in a future without cheap oil

Transport injustice already experienced by millions could be suffered by many more, if, as seems likely on the basis of present evidence, oil prices continue to rise over coming years and decades. Oil prices have more than quadrupled since 2002, briefly reaching $100 per barrel for the first time in December 2007. Oil supplies have failed to respond to demand, indicating that the era of cheap and easy oil may be at an end.

This is the conclusion of Sadad Al-Huseini, former head of Exploration and Production at Saudi Aramco and therefore uniquely placed to assess the state of the key middle eastern oil fields. He predicts that oil prices will continue to rise at the same rate over the coming years[7]. Many more people are likely to find themselves struggling with the cost of car use. If our society continues to be shaped on the assumption that we can all 'hop in the car', the proportion of people experiencing injustice and exclusion will grow.

1.3. Steps towards transport justice

The steps required to make our transport system socially just are the same steps needed to make the transport system less carbon-intensive and more robust to oil price shocks. The solutions to transport justice span across many complex problems:

Regeneration of blighted urban areas

Some parts of our towns have become blighted by road-based development. Spaghetti-style ring roads, feeder roads and underpasses, and heavy traffic on main arterial routes, create an environment that nobody wants to live in. Rich people and many businesses move away, leaving a degraded environment and few jobs. Cities like Birmingham have shown that it is possible to reverse this downward spiral, and that good public transport and cycle routes, a better local street environment, and less car-based town planning can stimulate urban regeneration, attracting more businesses and residents, and leading to more investment and more jobs.

How we build our towns and cities

New housing developments should be designed so no-one is forced into owning a car. In Freiburg, the development of Vauban is designed as a 'district of short distances' with a school, nurseries, a shopping centre, a food co-op, a farmers' market, recreation areas, and approximately 600 jobs all within walking and cycling distance for its residents. Trams and buses run every 5-15 minutes. There is a car club, providing affordable pay-as-you-go car hire so residents are not obliged to own a car.

Decent transport services for rural residents

The best rural regions of Europe combine conventional bus and train services on main routes between market towns with demand-responsive taxibuses that only run in response to a phone call. The standard of service in rural areas like Friesland, in the Netherlands, is high – all villages of more than 250 people have a regular service up till 11pm, seven days a week – but it is affordable because of the use of taxis rather than conventional buses. Cycle tracks are also crucial to link market towns. In Denmark, towns like Roskilde have traffic-free cycle paths radiating out along main roads for up to 30 km, giving direct, safe routes connecting to schools, public buildings and health-care facilities.

Help for people to lead healthy lifestyles

Active Travel Programmes give people the incentive and the confidence to get out on a bike ride or a healthy walk. Coupled with physical improvements in infrastructure, like cycle lanes, safe routes to schools and traffic calming, these programmes can reduce obesity, and the related problems of heart disease, diabetes and cancer.

1.4. An affordable programme

The measures needed to tackle transport injustice are often small-scale, affordable and excellent value for money.

We advocate a programme of thousands of small-scale improvements in our transport system, spread across our towns, cities and countryside. An additional annual spend of just £40 per citizen on these measures would have a major impact. This expenditure is modest in comparison with current spending on roads.

The solutions we advocate could achieve a socially-just transport system for less than current transport expenditure. They are the only fair option as we face an oil-scarce future.

2. Introduction

We live in a world which depends upon cheap fuel for travel. During the last half-century, our towns, suburbs and countryside have been re-shaped as a consequence of mass car ownership, which in turn has been made possible by a ready supply of fuel sold at the pumps for roughly the price of mineral water.

Cars bring benefits to their users. They enable access to places which would otherwise be too remote; they allow people to make spontaneous decisions about where and when to travel; they act as giant shopping trolleys for all manner of goods; and they signify the status of their drivers. But against these individual and immediate benefits must be set profound disbenefits, affecting both drivers and non-drivers – asthma and heart disease caused by air pollution; floods, droughts and food shortages caused by climate-changing carbon emissions; over 30,000 deaths and serious injuries every year in Britain alone; loss of opportunities for healthy exercise and the consequent obesity crisis; and so on.

In this report, our particular concern is the injustice experienced by millions of people in the UK who do not have a car, or struggle to afford one, in the 'must-have-car' society which we have created – injustice related to difficulties accessing work and other opportunities; reduced opportunity to lead an active healthy life; and, ironically, proportionately greater exposure than average to pollution, road danger and noise caused by those who *do* have a car. We argue that the problems caused by mass car ownership are not 'just' an environmental issue – urgent though it is to achieve massive reductions in the carbon emissions caused by our travel if we are to avert runaway climate change. The problems caused by the way we now travel are a matter of social justice, and should be of concern to everyone who seeks to create a fairer world with equality of opportunity.

Further, we argue that transport injustice already experienced by millions could be suffered by many more, if oil prices continue to rise. In December 2007, crude oil prices briefly reached $100 per barrel for the first time, and there is reason to believe that oil shortages, and consequent rising prices, will be a feature of the coming decades. Many more people are likely to find themselves struggling with the cost of car use. If our society continues to be shaped on the assumption that we can all 'hop in the car', the proportion of people experiencing injustice and exclusion will grow.

In focussing on the effect of rising oil prices on poorer people in the UK, we have necessarily omitted some wider issues of injustice associated with transport. These include the gross injustice that floods, droughts and other impacts of climate change partly caused by our 'first world' transport habits will most seriously affect the poorest people in the 'third world'; and the irony that our current quest for sustainable alternatives to petrol again threatens third world countries, with forests burned and land grabbed from small farmers to provide space for biofuel crops. Even within the UK, transport injustice is a multi-faceted problem and there are many other determinants of transport poverty than income alone. For example, children are no longer allowed to walk or cycle independently as previous generations did; older people become housebound or dependent on others for lifts once they can no longer drive; and disabled people find much of our streetscape and even much of our public transport is inaccessible. There are also respects in which the transport system fails to meet the needs of some women and some people from the black and minority ethnic communities. It is remarkable to reflect that so many of us fall into one or more of these groups – and indeed, that *all* of us are unable to drive for a significant proportion of our lives – and yet the political discourse and funding priorities for transport are so dominated by the car. The improvements to the transport system proposed in this report will bring benefits to all of these different groups, but we recognise that some will also require specific targeted transport interventions that we have not been able to detail within the scope of this report

Through highlighting the injustice experienced by people who do not have a car in our society as it is currently organised, we do not seek to imply that car ownership is in some way essential to everyday life, or that it is impossible to have a good quality of life if you do not have a car. In fact, our view is the reverse of this – we believe that even in our current car-orientated society, many people make a positive choice to remain largely car-free, or to minimise their car use, and feel that this choice enhances their quality of life. But those people who choose to live without a car will generally have made other choices too – to live in or near a city centre, or to live in an attractive rural area but to work from home. For many others, unable to work from home and living in an area with poor public transport and few facilities within safe, easy cycling distance, higher petrol costs in the coming years will be experienced as real hardship.

This report makes the case for far-reaching reform of transport and planning policies in order to develop a transport system that is socially just. It begins by exploring the ways in which our current transport system creates injustice. It then considers how tightening global oil supply and rising prices are liable to increase the inequity of our transport system. It looks at how our transport system should be designed in order to ensure social justice even in the face of future oil shocks, drawing on visionary examples of design and practice. These show that a transport system that is socially just is also low carbon. Finally, it makes recommendations for immediate action.

3. Existing social injustice in the transport system

The last three decades have seen the cost of motoring fall by 10% in real terms, while average household disposable income has more than doubled[8]. It might therefore be expected that we would be in the midst of a period in which everyone is able to enjoy freedom of movement and all the benefits of individual car ownership. In practice, this is far from being the case.

There are two main respects in which our transport system causes injustice, which we explore in more detail below.

First, those individuals who do not have access to a car, either because they cannot afford one or for reasons related to ill-health, disability or age, are at a disadvantage in a society in which jobs, shops, health care and leisure facilities are planned and located on the assumption that everyone can drive.

Second, people who make relatively little use of a car (and therefore cause less pollution, noise and severance of communities as a result of their travel) are still exposed to the pollution, noise and damage to communities caused by other people's car use. These people get all the disbenefits of car use, without any of the personal benefits. In certain respects, we may even argue that non-car-users experience *more* of the negative effects of a car-oriented society than car users – for example, because they are likely to spend more time exposed to noise, danger and pollution while travelling on foot or cycle or while waiting for a bus.

This section begins by exploring these two types of injustice from the perspective of individuals who experience them. It then looks at transport justice from the perspective of the community, and examines how we are all worse off because of the role of car dependency in generating an epidemic of obesity and related ill-health, and a vicious downward spiral in the quality of services on offer to entire neighbourhoods. It finishes by examining the conventional 'cure' for deprived, low-income communities – more road-building to stimulate the economy – and presents the evidence that this is ineffective.

3.1. Unequal access to opportunities and essential facilities

Transport, including walking and cycling, is the means to reach jobs, education, shops, healthcare, friends and family. But for many people the present transport system fails to connect them to these basic necessities. For example:

- Two out of five jobseekers say lack of transport is a barrier to getting a job 9. For young people, inaccessibility of work is cited as the most common obstacle to getting employment10.

- Nearly half of 16-18 year olds struggle to afford the cost of transport to reach their education11.

- Over one million people miss out on medical care each year because of transport problems12.

Difficulties arise even for everyday food shopping. Within just one decade, superstores doubled in number and out-of-town shopping centres quadrupled but these are often not accessible to people on low incomes. Furthermore, some low-income areas do not have sufficient spending power to be attractive to major retailers. Over the same period the number of small local shops that provide food within easier reach dropped 40%[13] [14]. These changes have led to the development of what have been termed 'food deserts'.

These problems are widespread, with over a quarter of households not having access to a car. However, they are not uniformly experienced by all sectors of society, and particularly affect those in low income and disadvantaged groups, perpetuating the problems those people face. Taking, for example, the poorest fifth of households, we find that more than half do not have access to a car[15].

Because of the access difficulties experienced by people when they do not have a car, there is also a tendency for people to seek to run a car even when they cannot really afford to do so. This can be a particular problem in rural areas. According to the Commission for Rural Communities, the official advisory body charged with tackling rural disadvantage in England:

In the lowest income group [quintile] between 72% and 88% of households in hamlets and villages own a car, compared to between 46% and 53% in towns and urban areas. This strongly suggests that a lack of accessibility is making low income households in rural communities run a car when they might not if they lived in areas with better transport services[16].

A report on issues of rural poverty by Barnardo's Cymru and NCH Wales documents the impossible choice faced by a mother working part time in the nearest town – a choice between the expense of running a car or the comparatively high cost of public transport to cover that distance:

"I spend all my spare money getting the bus into town. I'd rather be closer. It's £1.70 each time. We can't run a car. I could probably get a cheap one through my friend, but no way could we afford to run one. And driving lessons are really expensive."[17]

Amongst the poorest fifth of households, those who do own cars spend nearly a quarter of their income on the cost of motoring[18]. This is a high proportion of income in comparison, for example, with the official threshold that defines a family as suffering 'fuel poverty' if heating their house costs more than 10% of their income[19]. Although there is no similar official definition of 'transport poverty', that is what these families are experiencing.

Consequently, buying and running a car is a major cause of people getting into trouble with debts[20]. Citizens Advice have documented some of the cases where being obliged to have a car has led to unmanageable indebtedness. For example:

A man on a low wage contacted a Citizens Advice Bureau in Cornwall for debt advice. He needed a car in order to get to work, as he lived in a rural area with very poor public transport. But he could only buy one with credit at 42 per cent APR[21]*.*

3.2. Unfair exposure to problems caused by traffic and roads

People who do not use a car are still exposed to the negative impacts of traffic, without getting any of the immediate benefits that are enjoyed by car users. This effect on bystanders, by analogy with tobacco smoking, has been described as 'passive driving'. For example, although they are least likely to own a car, people in the poorest households are more likely to be injured or killed by a car, and this is especially true of children[22]. People who live close to busy main roads are more likely to suffer chronic ill-health, as evidenced by symptoms such as runny or blocked nose, sore eyes or sore throat, coughs, or lack of energy, even when other factors such as income are controlled for[23].

This relationship between road traffic impacts and disadvantaged individuals and neighbourhoods was acknowledged by the Government's Social Exclusion Unit in its report on transport and social exclusion:

The worst impacts of road traffic – namely pedestrian accidents, air and noise pollution and busy roads cutting through communities – disproportionately affect deprived areas and people facing social exclusion. This has damaging effects on individuals' quality of life and can also restrict access to local services by reducing the extent to which people walk and cycle. There is a clear link

between pedestrian accident rates and social class. The evidence is particularly marked for children. Children from social class V are five times more likely to die in a road accident than those from social class I. Social deprivation is also a key determinant of child road injuries[24].

3.3. Constraints on the opportunity to lead a healthy life

Excessive dependence on cars is a major factor in the obesity epidemic. The recent analysis by the Government's Foresight programme predicts that a majority of UK adults could be clinically obese by 2050, at an annual cost to society of £49.9 billion in today's money[25]. It points out that those who are already disadvantaged are more likely to suffer obesity and the considerable problems associated with it:

Being overweight or obese increases the risk of a wide range of chronic diseases, principally type 2 diabetes, hypertension, cardiovascular disease including stroke, as well as cancer. It can also impair a person's well-being, quality of life and ability to earn...

Although ...obesity occurs across all population groups, the socially and economically disadvantaged and some ethnic minorities are more vulnerable.

The highest rates of adult obesity are amongst men and women in households in the lowest income quintile, and childhood obesity has also risen fastest amongst children from poorer backgrounds[26].

Although obesity arises from multiple factors, including diet and occupation as well as travel patterns, the Foresight report recognises the key role of what it terms an 'obesogenic environment'.

Lack of safe and attractive walking and cycling routes, lack of space to store a bicycle at home or work, and even lack of knowledge about how to repair a bicycle or how to cycle safely, could all be considered as contributing to an obesogenic environment.

This link lies behind guidance on physical activity and the environment from the National Institute for Health and Clinical Excellence (NICE), of which the main thrust is the importance of enabling people to include 'active travel' - walking and cycling – in their daily lives[27]. People in the poorest quintile of households do, in fact, make more trips by walking in comparison with other income groups, but they travel less far and make fewer trips by bike[28].

3.4. Urban degeneration and decline as a result of car-based development

The present system of transport and spatial planning not only serves people inequitably, it can perpetuate or even generate areas of social exclusion and deprivation.

Where a transport system becomes over-dependent on cars it can propel a vicious circle of urban decline (Figure 1)[29]. Those who can afford to buy and run cars find that jobs and houses located at car-accessed urban fringe sites are within their range. So they move out, but in doing so they remove their money from the local economy, so that local facilities and services, including, ironically, public transport, become less viable. As these facilities and services decay, more of the better off tend to move away.

Once car-dependency is established, there is a whole series of vicious circles that tend to perpetuate that situation (Figure 2)[30]. This system of vicious circles is widely applicable, but, as already noted, poorer areas are more likely to be stricken with major roads, heavy traffic and a resultant poor quality environment, so the negative loop labelled in the figure with 'hostile road environment' is strengthened. A hostile road environment may be one of the reasons that the poorest fifth of households travel somewhat less by bike than middle-income groups, even though cycling can offer cheap transport[31].

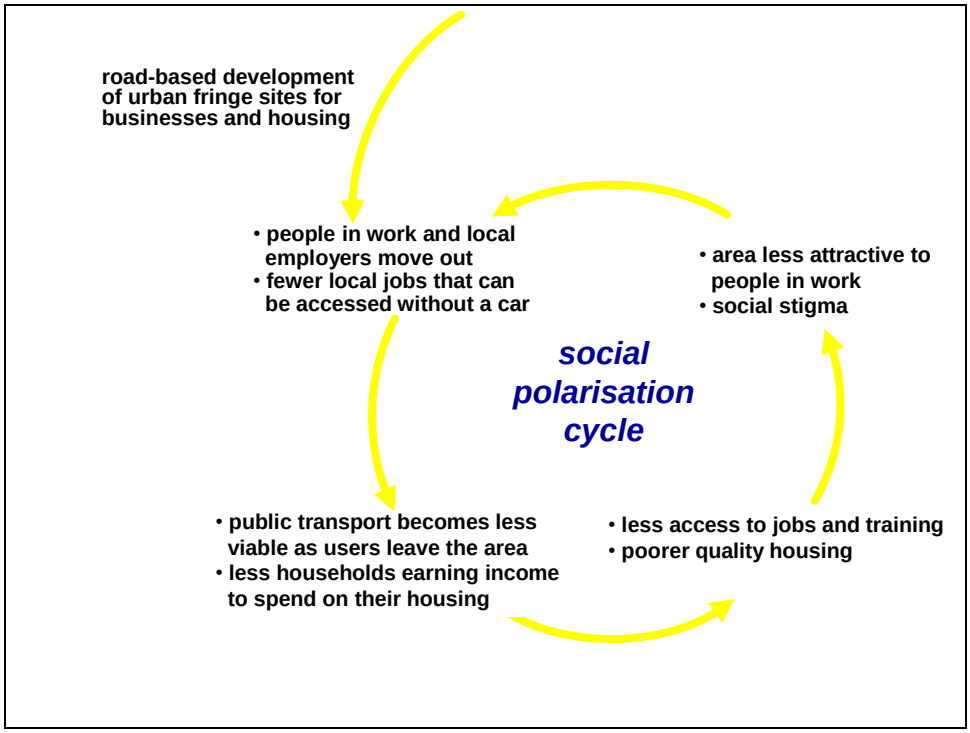


Figure 1: vicious circle of car-dominance and social polarisation

(modified from Alan Wenban-Smith, Urban and Regional Policy, alanwenbansmith@pobox.com)

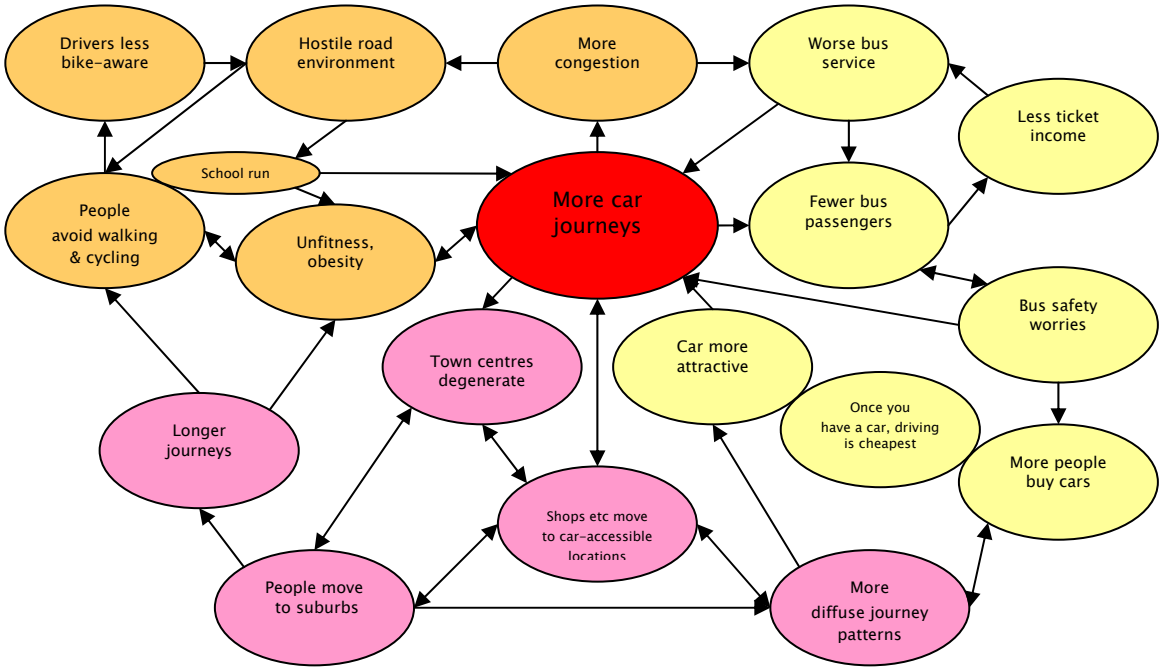


Figure 2: vicious circles of increasing car dependency

(from Roger Levett, Levett-Therivel sustainability consultants roger@levett-therivel.fsnet.co.uk)

The feedback loops illustrated in Figure 2 suggest that any car-dominated transport system tends to become more car-dominated. If there are no powerful over-riding interventions, the end result is:

- Degraded inner cities
- Doughnut development
- Suburbanised countryside
- Transport poverty
- Higher fuel intensity[32].

Once a car-dominated environment is established, it is physically unpleasant and disperses facilities for everyone, not just the poor. Everyone can have cars, but then be impoverished by what a car-dependent transport system brings with it. Moreover, cars ultimately fail as a transport system because assertion of the individual's freedom to use them destroys the collective freedom to travel as the roads jam up. It is now over a decade since the Government's advisers on trunk roads stated that it was just not feasible to keep building more roads to take all the possible traffic[33].

3.5. The myth that new roads stimulate economic renewal

Despite these links between road-based development, social polarisation and transport poverty, investment in roads is still seen as a solution to economic decline and unemployment in deprived areas. But the often-repeated mantra of decision-makers that 'roads bring jobs' has little evidential basis. Reviews of the effects of access to the motorway network on employment patterns suggest that road-building has little if any 'buoying up' effect on struggling local economies.

Take, for example, the case of Liverpool:

Motorists visiting Liverpool would be impressed by the easy access from the motorway network, the generally high quality roads including expensive tunnels under the River Mersey, flyover access to the city centre which has abundant car parking. If such visitors believed that road building led to economic success, they may assume that Liverpool is a thriving economic centre. In fact, Liverpool is one of the most economically deprived areas in Britain, with high unemployment and poverty levels, and a shrinking population, falling from 516,700 in 1981 to 468,000 in 1998. In 1993, Merseyside was awarded Objective One status by the European Union, in recognition of Merseyside's economically disadvantaged position, well below the European average. Objective One status makes it eligible for special funding from the EU to improve its economy[34].

A further example is provided by Lancashire, where changes in employment in local authority districts show no better performance in districts through which the M65 passes than in districts through which the road does not pass. According to one study, the worst performing area in the period in question was the Fylde region (including Blackpool), which had excellent motorway connections via the M55 to the M6. In north-east Lancashire, construction of the M65 resulted in very good access to the M66/M62 and the national motorway network for the districts of Blackburn, Hyndburn, Burnley and Rossendale, but only one of these places (Rossendale) showed an improvement in economic fortunes and the others showed very little change. This lack of a 'roads effect' on local economies is not surprising, since the same study found that Lancashire firms ranked 'ease of access to the motorway system' as the *least* important factor influencing location decisions, whereas 'availability of grants or loans' was ranked first[35].

These are not isolated examples. Another study looked at 34 local authority areas ('travel-to-work areas') to examine whether there was a correlation between economic performance (measured by changes in indices of unemployment and job centre vacancies over a six year period) and accessibility to the motorway network and other significant destinations (measured by journey times)[36]. It found that there was no statistically significant correlation. In other words, travel time to the nearest motorway or dual carriageway had no influence on economic performance. The same conclusion held true even when economic performance was examined at a much finer, sub-regional scale within four areas (NE Lancashire, Humberside and Doncaster, East Midlands and the former county of West Glamorgan). The conclusion is clear: no beneficial 'roads effect' could be detected in the performance of local economies. In contrast, the same report found that availability of grants to businesses was a good predictor of economic success, and in some cases the main factor accounting for differences in economic performance.

These real-life examples are consistent with the conclusions of the Government's advisers, the Standing Advisory Committee on Trunk Road Assessment (SACTRA). In its 1999 report on transport and the economy, SACTRA concluded that while there were *in theory* a number of ways in which investment in transport infrastructure could improve economic performance (e.g. stimulation of inward investment, unlocking inaccessible sites for development, rationalisation of production, distribution and land use), empirical evidence supported the conclusion that, for the economy as a whole, any such effects were on a smaller scale than had been claimed. At a local level, SACTRA examined a number of studies of the economic impacts of individual transport investment projects, and here again they found little evidence of a relationship, concluding that: 'the results do not offer convincing general evidence of the size, nature or direction of local economic impacts'[37].

Most recently, when the former Chief Executive of British Airways, Sir Rod Eddington, was commissioned to carry out a study for the UK Government into the role transport could play in sustaining productivity and competitiveness, he concluded that 'transport is unlikely to be the answer to regenerating an area or region' and that 'a blanket 'build it and they will come' approach to transport projects is extremely speculative'. Eddington argues that investment in transport is more likely to provide economic benefits in locations where there is already evidence of underlying demand, as demonstrated, for example, through congestion – and even in these locations, Eddington urges a 'mode agnostic' approach to transport investment, which involves consideration of all possible means of tackling congestion including public transport and demand restraint, rather than roads. In areas where economic performance is relatively weak, Eddington sees little, if any, justification for investment in new roads as a means to stimulate the economy [38].

Thus, it seems that there is no rational basis for investment in road schemes as a means of stimulating economic growth, and therefore jobs, in areas where performance is weak. We may even argue that investment in roads undermines efforts to achieve a more healthy economy, and is contrary to principles of social justice, because it diverts attention and potentially reduces the resources available for more effective interventions to stimulate job growth.

3.6. Deep-rooted solutions for deep-rooted problems

To their credit, the present UK government and devolved governments have made clear that the present inequities of the transport system are unacceptable. The *Making the Connections* report[39] from the Social Exclusion Unit in 2003 launched a series of measures to improve 'accessibility', including a requirement for accessibility planning in England. The transport strategies for Wales[40] and for Scotland[41] now put accessibility and reducing social exclusion amongst their core aims. These concerns are also part of the regional transport strategy for Northern Ireland, although less prominently[42].

Although *Making the Connections* took a wide-ranging view, it is fair to say that much of the resulting activity to improve 'accessibility' feels like attempts to apply sticking plasters to injuries caused by socially damaging macro transport and spatial planning policies. Of course it is vital that poorer sections of society receive help to cope with a socially unjust transport system, but it would be better if the transport system was equitable to start with.

It is already clear that another transport vision is necessary in order to improve social justice and regeneration of deprived areas. But, as the next section discusses, the rapidly increasing pressures on global energy supply have the potential to worsen the present injustices of the transport and planning system. Improving social justice in the face of decreasing global energy supplies and sharply increasing oil prices will require fundamental changes to transport and planning.

4. Transport and social injustice in an increasingly oil-scarce world

4.1. End of the era of cheap oil

Although production capacity at new fields is expected to increase over the next five years, it is very uncertain whether it will be sufficient to compensate for the decline in output at existing fields and meet the projected increase in demand. A supply-side crunch in the period to 2015, involving an abrupt escalation in oil prices, cannot be ruled out[43].

International Energy Agency, 2007

After the oil shocks of the 1970s, when the oil-producing countries of OPEC first flexed their economic muscles, the idea of an 'oil crisis' gradually faded, and the dawning era of plentiful North Sea oil dimmed British memories of petrol shortages. Then, as scientific evidence for climatic disruption mounted inexorably, the threat of 'running out of oil' was overtaken by the even bigger threat that the atmosphere could not safely withstand combustion of so much oil - 'running out of sky,' as one observer put it[44].

But the underlying arithmetic of oil production and consumption remains inescapable. The rate of production of oil, a finite resource, can not go on rising indefinitely and must at some point start falling as the sources of oil run out. World oil production has historically shown peaks and plateaux but it has now remained broadly level for two years despite oil prices soaring to sustained record levels, recently topping $100 per barrel[45]. This failure to bring more oil on stream, even with prices quadruple their 2002 level and international political pressure on oil producers to produce more oil, has drawn attention back to the question whether the world is close to 'peak oil', the point after which the rate of oil production will start decreasing.

While there are still some forecasters who consider that this peak could be a decade or more away, a recent review of expert opinion concluded that most analysts predict peak within seven years and that a majority of these now consider that the peak may be imminent, or even already here[46, 47].

In practice it will be impossible to put a date on peak oil until we are some years past it and are able to look back on data that shows the rate of oil production falling away. But by then it will be too late to mitigate the most severe potential impacts of constraints on oil supply.

This concern led a recent investigation into crude oil by the United States Government Accountability Office to conclude that the USA needs a strategy to cope with peak oil[48]. This report identifies transport as a particularly vulnerable sector. It reasons that, even for more optimistic forecasts of the date of peak oil, transport will need such a far-reaching adaptation that change must start immediately.

The immediate significance of the peak of oil production is the potential for sharp upward steps in fuel costs with concomitant economic, social and political repercussions. Because the world is so heavily dependent on oil, a small diminution in oil supply, or merely constraint on growth in supply to less than growth in demand, is liable to cause steep price rises. Since the turn of the century, China alone has accounted for one third of the increase in global oil demand, but its consumption per capita is still less than one fifth that of Europe, indicating potential for its demand to rise much further.[49]

Sadad Al-Huseini, former head of Exploration and Production at Saudi Aramco, argues that the present plateau in production is actually a ceiling and will unavoidably result in sustained yearly price rises of at least $12 a barrel over the next four to five years[50]. This is roughly equivalent to the rate of price increase over the last five years, implying continued rises in the cost of petrol at the pump in the short term. Going beyond this point, oil industry analysts who have expressed concern about

constraints on oil supply suggest that there are likely to be further sharp increases in oil prices, and that even relatively minor interruptions to supply will cause oil price volatility and price spikes.[51]

A collision of rising demand with constrained oil supply seems unavoidable. The oil company Chevron pointed to the imminence of fundamental changes when it recently stated: 'one thing is clear, the era of easy oil is over'[52].

4.2. Implications of constraint on oil supply for our transport system and social justice

Over the last thirty years motorised travel has become significantly more affordable, as motoring costs have declined in real-terms and household disposable income has risen. It is this, more than anything, which has stimulated increasing car ownership and use, and driven the construction of out-of-town superstores, business parks and hospitals, and the closure of local post offices, shops, schools and job centres. Cheap oil has fuelled sprawl and the 'rationalisation' of public services, and this in turn has required us to drive. In the coming decades, we face the possibility – and perhaps the likelihood – of the downward trend in motoring costs being reversed so that motoring will consume a growing proportion of household income. But while we may be heading back to the 1970s in terms of the affordability of driving, we will be doing this in the context of land use patterns and location of essential services which make everyday life without a car more difficult.

Today, personal travel is heavily dependent on the car, which accounts for four fifths of the distance travelled, with only the driver in the car for most of these journeys[53]. An average car used as one-person transport is the most carbon intensive mode of travel, short of aviation.[54]

Reliance on a car is the worst position financially when there is a significant rise in the price of oil. The entire transport system is fragile to oil price shocks, but people who are car-dependent are the most vulnerable. Although higher income groups make more trips by car, even amongst the poorest fifth of households, car journeys account for 46% of trips (in fact a majority of trips for those households in this income group that have access to a car)[55]. As discussed earlier, running a car is already a strain on the finances of many of these households, consuming on average 24% of their household income[56].

A study that looked at the effects of fuel price increases concluded:

Poorer households...that do run cars...are particularly hard-hit by fuel price increases. For instance,... in order to preserve the volume of fuel they buy, a person living on their own on a state pension and paying for petrol would have to spend [as additional expenditure on fuel] twice the proportion of household income as a two-adult family or a retired couple not on a state pension[57].

Rising oil prices would mean that people who already struggle to run a car would face either having to give it up, or cutting back on other household costs. But rising prices would also affect people on slightly higher incomes, who would have to re-assess whether they could still afford their car. An increasing number of people would begin to experience transport poverty.

How much poorer households' finances might be strained depends both on the trajectory of oil prices and on economic and political responses as prices rise. Experience of past fuel protests has shown that politicians are susceptible to pressure from motorists, over and against stated environmental principles, at least in the short term. They might therefore seek to act to mitigate the effects of oil price rises. However, the extent of private motoring and its carbon inefficiency combine to make the cost of protecting motorists from oil shocks prohibitive. Politicians will also be aware that any steps towards such action are liable to commit them to a course of ever-increasing expenditure as oil prices continue to rise – or, just as problematically to the public purse, an ever-

greater drain of income from fuel taxes which would have to be compensated either by tax rises elsewhere or by cuts in public expenditure.

People will look for other options as they see the cost of travel by car becoming more expensive. But many of the households who are presently squeezing their finances to meet the costs of running a car are doing so precisely because they see that their other options are limited. In practice, the 'choice' faced by some poorer households becomes whether or not to make a trip at all. As the statistics cited earlier show, this means 'choosing' not to visit the dentist, or not to go to an educational course, or to rule out work at a particular site. This means an increase in social exclusion.

Viewed overall, the trajectory of our present transport and planning system appears to be headed towards more social division as we enter an increasingly oil-scarce world. On the present course, expensive carbon-dependent transport affordable only by the better-off will increasingly contrast with unaffordable transport and out-of-reach necessities for the poorest sectors of society. The next section looks at how this undesirable and unjust outcome might be averted.

5. A socially just transport system despite rising oil costs

It is inevitable that our transport and planning system must shift towards less car-dependency and less carbon-intensity as oil becomes scarcer, but it is not clear whether the transition will be made fast enough to avoid adverse social consequences. If the shift is not made sufficiently rapidly, present inequities in the transport system are liable to increase as rising oil prices and continued car-dependency lead to a situation in which only the more wealthy can afford to travel where they need.

In this section, we look at what must be done to create a socially just transport system, in which everyone, rich or poor, has access to the facilities and services they need. The solutions proposed here demonstrate how a socially just transport system is also a low carbon system, robust in the face of future oil shocks.

Our focus is primarily on examples of actions to enable as many trips as possible to be made without using any oil at all – that is, by walking and cycling – and secondly on actions to maximise the efficient use of fuel, including encouraging car-sharing and efficient public transport.

We begin by looking at the potential solutions in urban areas, and then consider rural areas. Next, we look at a common criticism of public transport alternatives to the car, which is that they are too expensive for people on a tight budget. We consider two of the important benefits of the approach we propose, beyond the fundamental point of justice and fair access for all: that it will enable people to lead more active and healthy lives, and will provide a means to regenerate depressed urban areas. Finally, we explore why a policy prescription which delivers so many benefits – social justice, better health, and regeneration – is not yet accepted as the norm.

5.1. Solutions for urban areas

The patterns of travel in towns and suburbs are always changing: when a superstore or edge-of-town business park opens; when new transport infrastructure is built; and when residents move into newly-built housing estates. Each individual planning decision may have a small effect on levels of car use, but taken together over a period of several years, the effect is large. For this reason, future decisions on new development and transport infrastructure need to be based on the principle of 'designing the world that we wish to create'. This implies *not* allowing new retail or office development which is located and designed for car use, and *not* increasing road capacity.

The current house building programme, including the major housing expansion in four growth areas in the south of England and the planned 'eco-towns', offers an opportunity to 'design in' low car use on a large scale. As yet it is necessary to look beyond the UK to find examples of new developments that achieve this.

Vauban development in Freiburg, Germany, is one such example. Vauban will eventually create housing for 5000 people and 600 permanent jobs. Many of the private dwellings were built under innovative cooperative arrangements that have reduced build prices to within the range of people who would normally find it hard to afford to buy their own homes and there are also 200 social housing units. It has been planned to be a model of sustainable transport, aiming to 'reduce the use of cars in the entire district to everybody's benefit'[58] [59].

Vauban development in Freiburg, Germany

This has been achieved by means of both carrots and sticks. Vauban is designed as a 'district of short distances' with a school, nurseries, a shopping centre, a food co-op, a farmers' market, recreation areas, and approximately 600 jobs all within walking and cycling distance for its residents. Longer journeys to the city centre, recreational areas and mainline station are served by trams and buses running at 5 -15 minute intervals, and there are plans for a local train station. Much of the development is zoned so that parking spaces are not allowed on private property. Instead, cars are parked in one of the multi-storey car parks on the edge of the residential area, run by a council-owned company. Residents who own a car must buy a parking space, the price of which was calculated to cover the cost of constructing the car park, and must also pay a monthly fee to cover its upkeep. This gives Vauban the claim to be Germany's largest 'car-free' development. In fact, cars are allowed onto the streets for setting down and picking up, but the streets are designed according to home zone principles to be 'a playground for kids and places for social interaction', and cars must travel at a walking pace. For residents who do not own a car but need use of a vehicle, there is a car club fleet stationed in the communal car parks available on a pay-as-you-go basis. Almost half of all residents (45%) belong to the car club[60]. It is noteworthy that of the households that now do not own cars, 57% did own a car until they moved to Vauban. Even amongst the car owners, 61% choose to cycle to work, and 91% of the non-car householders commute by bike[61].

Vauban offers a blueprint for new housing development in Britain. It also points towards what can be done in existing residential suburbs to provide people with an attractive alternative to using a car. In comparison with many towns in North America or Australia, British towns and cities have a form that gives the potential to operate through sustainable modes of transport. Most town and city centres were built in an era before the private car and consequently are appropriately scaled for journeys on

foot or bike, even if subsequent alterations to facilitate car access have tended to militate against ease and comfort of movement by pedestrians and cyclists. Suburban areas further from town and city centres, were in many cases planned around commuter travel hubs such as rail stations that still operate, even where these suburbs have become increasingly car-dependent. This inherited urban form means that most car journeys in British towns and cities are actually very short. Research by Sustrans and Socialdata in Darlington, Peterborough and Worcester found that between 60% and 86% of car trips within those towns were shorter than five kilometres – in other words, about a 20 minute cycle ride. Between 7% and 11% of car trips were less than a kilometre, or about a 10 minute walk[62].

There appear to be two principal factors which result in these walkable or cyclable trips being made by car. The first is a poor quality local environment, in which noise, pollution, traffic danger, and urban decay discourage walking and cycling. The second is habit – once families have acquired a car, there is a tendency to use it even when alternatives are available – and lack of knowledge of good alternative options.

Making the local environment better in order to facilitate both cycling and walking is a central aim of a series of projects that Sustrans terms 'Liveable Neighbourhoods'. These look to completely upgrade a neighbourhood's street environment through a wide-ranging set of improvements. One example is the Dings in Bristol, an area of seven streets with 117 houses, 12 businesses and a diverse community. It is in one of the three most deprived wards in Bristol, amongst the 10% of most deprived wards in the UK, and 50% of children at the local primary school are eligible for free school meals[63]. Prior to the project it suffered long-term physical decline, severe rat-running and a daily influx of drivers who used its streets as a commuter car park. Safe walking and cycling routes were very limited. Less than 10% of residents rated their own street as 'safe' for themselves and 90% considered their street too unsafe for children to play in[64].

A few years on, more than 40% of residents now think that their street is 'safe' for themselves and even sufficiently safe for their children to play in. This transformation in feelings reflects a physical transformation of the streets. Speed limits have been reduced to 20mph throughout the area and the streets have been re-modelled as 'home zones' designed to made pedestrians feel that they have as much right to be there as cars – or more, even. Street art, tree planting and street flower beds are positioned to make the streets feel more pleasant. The planting and other physical features are positioned so that driving at much more than a walking pace feels uncomfortable, or is actually impossible. Community involvement in the scheme has been extensive, including the council and Sustrans helping plant trees and shrubs in people's front gardens to improve the overall street environment , and the 12 small businesses in the home zone express a high level of satisfaction with the changes. Two new traffic-free walking and cycling routes now connect the Dings to local rail and bus services, to the National Cycle Network and to local green spaces for recreation. Work is continuing on provision of safe cycling routes to the local school, and there is a programme of free bike servicing, training and safety advice to encourage young residents to take advantage of the cheap and healthy travel offered by cycling.

The Dings project has succeeded in regenerating an estate and giving residents options for sustainable travel. Those options are not limited to walking, cycling and public transport, but include a car club and taxi share scheme to provide affordable vehicle use to residents when they need it, without the financial burden of having to own a car. The Dings regeneration has also led to adoption of the home zone design as the street-plan for a new neighbouring development by Barretts, who received planning permission on condition that the new streets must incorporate the same home zone principles.

Some housing associations have also given careful thought to provision of affordable and sustainable travel options for their tenants, planning estates so that residents live in a high quality built environment that encourages access on foot and use of public transport. One innovative

project is Slateford Green in Edinburgh, where Canmore housing association has built an estate of 120 units that is 'car-free'. Space normally allocated to roads and car parking has been used to provide pleasant public areas, including a pond that has become an oasis for urban wildlife. Choice of location for the estate was key to enabling a car-free design. It lies between two main bus routes into the city centre. As the on-site concierge, Alan Wood, comments, 'It's good for the kids and the environment. And you can get buses into Edinburgh every two minutes – there's no reason to have a car'[65].

In fact only 17% of those on the association's waiting list actually own cars[66], so it makes sense for Canmore to site and design the development so that its tenants do not need a car. A conventional car-based development would have put tenants in the position of needing to buy and run a car and increased the financial burdens on tenants moving in. In contrast, the chosen plan will help residents of Slateford Green escape some of the consequences of future rises in fuel prices.

The initiatives at Vauban, the Dings and Slateford Green demonstrate some key features to enable low car use in urban areas. They can be summarised as good design and good services. Good design includes everyday facilities close to people's homes; traffic-free walking and cycling routes; home zone design for streets; and careful management of car parking so that it does not impact in an unacceptable way on other uses of streets. Good services include frequent, high quality public transport connections to the city centre; and car clubs to provide affordable use of a car on the occasions when one is really needed.

Alongside good design and good services, it is important to provide people with good information, to make sure that they are aware of the alternatives on offer. Sustrans TravelSmart programme is an example of a programme which offers households travel information tailored to be most relevant to their needs – for example, providing bus times for the bus stop nearest their house, or a good cycle route for their trip to work or college. These types of information services, that sum up and simplify the travel choices available to an individual, are highly effective in reducing car use.

5.2. Solutions for rural areas

There is a common perception that living in a rural area means that the only realistic travel option is a car, and therefore that the only solution to social exclusion in rural areas is higher car ownership. In the context of rising fuel costs and generally low household incomes in many rural areas, this is a bleak outlook.

It is certainly true that dispersed settlements, facilities and employment sites in rural areas pose particular difficulties. But analysis of the actual journeys made by car in country areas shows that a surprisingly large proportion can readily be made by other means, or could be with simple small changes to transport services or infrastructure.

One survey of car journeys to work in the rural Dyfi Valley in mid-Wales showed that a good alternative already existed for one third of these journeys – either the trip was short enough to cycle or walk and there was already a safe route or there was a conveniently timed public transport service. For a further quarter of these car trips, fairly simple improvements to public transport, or a cycleway or footpath, would have made the journey possible without a car. Another 20% of car trips were exact matches with another car trip being made between the same village and destination, and could be made by car-sharing. Only 20% of car trips were very difficult to make by any means except the car and were not possible through car-sharing[67]. Similarly, a travel survey of staff journeys to work at Gwynedd council offices in Dolgellau in North Wales found that nearly a quarter were under one mile (i.e. walking distance) and over one third were less than five miles (i.e. cycling distance), but almost all of these journeys were made by car[68]. These areas might both be termed 'deep rural', and would normally be seen as amongst the most challenging places for the development of 'active' travel (i.e. walking and cycling) and public transport.

A traffic-free greenway on the National Cycle Network

Fast main roads that provide an easy connection for cars between two villages or towns may themselves be the obstacle to active travel, even if the distance is manageable by walking or cycling. It is for this reason that rural areas of Denmark have invested in extensive provision of traffic-free cycle tracks which run alongside rural highways. The Danish Ministry of Transport recommends that rural areas should have cycle tracks at a grid spacing of 3-5km. Towns that provide facilities to the surrounding area are at the hub of radiating cycle paths. In the case of the town of Roskilde, the highways extending in all directions have fully segregated cycle paths for distances of up to 30 km. These follow the main roads and give cyclists direct, safe routes connecting to most schools, public buildings and health-care facilities. The same strategy is required to cater for journeys in rural Britain that are walkable or cyclable, which, as noted above, are a much higher proportion of rural trips than is generally realised[69].

A number of European examples of rural public transport services succeed in providing a strikingly high standard of access, even in remote areas. These benefit both socially excluded groups, including disabled and older people, and the general public, by combining public transport budgets with budgets for dedicated health services, school services or special needs services to create an on-demand door-to-door shared taxibus service available to all. In some cases, disabled and older people pay a concessionary fare, and other users pay a premium fare, reflecting the fact that the service is door-to-door. This has the benefit that it positions 'special needs' transport as synonymous with 'premium service'.

Other features that these high quality rural transport systems have in common are:

- conventional timetabled bus (or train) services on key routes, e.g. between market towns or on radial routes into regional centres

- demand-responsive services (i.e. minibuses or taxis that only run in response to a phone call) that feed in to services on key routes, generally offering the option to pick up and set down at people's homes

- full availability of all services during off-peak periods, evenings and week-ends, if necessary key route services becoming demand-responsive during periods of low demand to avoid vehicles running unnecessarily

- reasonably priced fares

- integrated ticketing between different types of service so that passengers do not pay twice just because their journey requires an interchange.

One example is Friesland province in the Netherlands, which requires bus operators to run a three-tier network, determined by settlement size. The lowest level is the in-fill 'Aanvullend' network which guarantees all villages of more than 250 people a regular service up to 11pm, seven days a week. Bus operators have the option of providing some of these services by taxis that operate only on demand - 'Belbus' services – which account for one fifth of bus kilometres. In many areas this is backed up by the option of a door-to-door service Region taxi operating 7am to 11pm[70].

For those rural trips that will require a car despite good public transport and cycle routes, there are still ways to make the journey both less fuel-intensive and less expensive. Sharing a lift halves the fuel cost per mile and works well where people are regularly making the same trip at the same time. Computer databases can help to match people's trips. In the case of one successful scheme in Dorking and Reigate, car-sharing is facilitated because there is a well-travelled commuting corridor between the two towns and because the most significant employers decided to share their car-sharing database[71].

A car club can give access to a car on a per-hour or per-mile basis, thereby avoiding the need for an occasional user to bear the costs of purchase, tax, and insurance. Although commercial car club operators have so far concentrated on developing their services in major towns and conurbations, some community-led rural car clubs do exist and operate successfully. The attractiveness of these schemes for rural areas will increase if fuel costs rise, because they enable people to 'mix and match' their travel patterns, making more use of public transport, cycling and walking, and potentially selling their car.

As in urban areas, it is important to offer tailored information about the services that are on offer, and to market them to car drivers. Sustrans has carried out a successful pilot of its TravelSmart individualised travel information provision in Frome, Somerset, delivering a six per cent reduction in car trips, and a significant shift to walking[72]. In rural Austria, an initiative known as 'Verkehrsparen Wienerwald' ('Traffic-Saving Wienerwald') has delivered reductions in car use and increases in cycling through information, awareness-raising, publicity and community events. The pilot programme in the small town of Langenlois reported cuts in car driver mode share from 63% to 54% over four years and a four-fold increase in cycling[73].

5.3. Public transport on a tight budget

It is a common criticism of public transport in Britain that, compared to a car, it is too expensive for people who are on a tight budget. This is borne out by statistics on the cost of travel, which show that in real terms the cost of bus and rail travel has gone up by 50% in the last thirty years, while the equivalent motoring cost has fallen 10%[74].

For people on lower incomes, buses are generally the most important public transport option. Households in the lowest income quintile make more trips by bus than any other group – more than double the number of bus trips made by households in the top three income quintiles[75]. Ensuring that bus travel is both affordable and available should therefore be a priority as oil prices rise.

A study for the Joseph Rowntree Foundation has assessed the extent to which targeted public transport schemes – particularly buses – can reduce social disadvantage. In addition to qualitative study of broader benefits, it used the government's appraisal guidance to calculate how much money is saved by users as a result of the public transport services in question[76]. The bus service that connects Braunstone, a marginal estate in Leicester, to the city's facilities and main employment sites, is estimated to save residents over £600,000 per year.

The calculations made in this study only compared users' travel costs against the costs they would face if the bus did not exist, and did not place any monetary figure on the value of accessing jobs, health care or other facilities. But there are financial benefits to users from, for example, accessing paid employment, and savings to the public purse from taking people off unemployment benefit or keeping them healthy. One of the schemes considered, in Walsall, does not subsidise a bus, but directly targets out-of-work people with free travel cards and travel information in order to get them to training, job interviews, or to the work site. The evaluation of this scheme calculated that the fares paid for each successful job entry would be recouped to the public purse in less than one month

through saved Job Seekers' Allowance. Getting to work accounts for 45% of the surveyed users of a bus that links deprived communities near Redruth, Camborne and Pool in Cornwall with employment and educational facilities, and nearly half of these said that without the bus they would not be able to get to work at all.

Initiatives such as these offer a way of targeting investment towards the people who need cheap fares most.

5.4. Health benefits of a fair transport system for an oil-scarce world

The urban and rural examples described above offer a low-tech, low cost blueprint for socially just transport in a world where oil is increasingly expensive. This alone should be sufficient to recommend them for implementation by a wide range of actors, from governments and local councils to community organisations, businesses and even concerned citizens, all of whom can play a role in adapting our transport system.

But the approach that we have outlined has a further important merit, which is, that through enabling and encouraging active travel, it will enable people to stay fit and healthy and have higher quality lives. In the context of our concern with social justice, this is particularly important because of the statistical link noted earlier between deprivation and the incidence of obesity and obesity-related illnesses.

The particular importance of active travel as a means to reduce obesity is that – in contrast to expensive gym membership – it is free, or practically so. Exercise gained through walking to everyday destinations expends no more than shoe leather, and bikes – good second hand ones or even brand new cheaper brands – can be bought for tens of pounds rather than the hundreds or thousands of pounds required to purchase a car and run it.

The National Institute for Health and Clinical Excellence (NICE) has comprehensively reviewed the evidence that links transport schemes which promote walking and cycling (such as traffic calming, pedestrian and cycle paths, safe routes to school and cycle networks), to increased levels of physical activity and improvements in people's health. On the strength of this evidence, guidance from NICE[77] recommends that planning and transport authorities should:

Ensure planning applications for new developments always prioritise the need for people to be physically active as part of their daily life. Ensure local facilities and services are easily accessible on foot, by bicycle and by other modes of transport involving physical activity'. (from Recommendation 1)

Ensure pedestrians, cyclists and other users of transport involving physical activity are given the highest priority when developing or maintaining streets and roads. Use one or more of the following methods:

- *re-allocate road space to support physically active modes of transport*
- *restrict motor vehicle access*
- *introduce road-user charging schemes*
- *introduce traffic calming schemes to restrict vehicle speeds*
- *create safe routes to schools.* (from Recommendation 2)

Plan and provide a comprehensive network of routes for walking, cycling and using other modes of transport involving physical activity. These routes should offer everyone convenient, safe and attractive access to workplaces, homes, schools and other public facilities. (from Recommendation 3)

Examples of direct benefits to the health and well-being of people in deprived areas from schemes to promote walking and cycling include:

A study of people living in a deprived housing estate on the outskirts of Glasgow where the main road was traffic calmed. This showed that 20% of adults walked more after the traffic calming, and there was a statistically significant improvement in physical health[78].

A study of the effects of school travel plans, which looked at 30 schools. This showed that interventions such as walking buses, traffic calming, pedestrian crossings and cycle routes led to increased walking and cycling, but also to a range of wider benefits, such as increased safety, better health and fitness, educational gains through better attendance and punctuality and greater alertness of pupils, and personal development gains such as greater independence and improved self-esteem. Looking specifically at case study schools in low income areas (as measured by a high proportion of children being eligible for free school meals), these wider benefits are clear. For example, at one case study school in a low income area of Knowsley, the school's learning mentor reported that children who had started walking to school were now more able to concentrate on class-work[79].

An evaluation of a Sustrans project to promote walking and cycling through organised walks and rides in northern Caerphilly, the County Borough with the highest incidence of overweight and obesity in Wales and a high level of deprivation. Some 50-70% of participants considered that they were healthier and/or more fit as a result, and between one-third and two-thirds of the participants

said they were happier and/or more confident. Twenty per cent said the project had helped them lose weight[80].

The interventions needed to encourage active travel are exactly the same as the interventions to ensure people on lower incomes are not forced into transport poverty by rising petrol costs. They include a mixture of physical improvements in infrastructure (cycle lanes, traffic calming, safe routes to school) and campaigning, information and awareness-raising. This suggests that there is good potential for health bodies to work with transport bodies on an ambitious programme of thousands of small-scale interventions, spread right across towns, suburbs and rural areas, to create a transport system which is both socially just and healthy.

5.5. Reversing the downward spirals of car dependence and urban degeneration

In section 2 of this report, we noted that car-dependence tends to be self-perpetuating. The work of sustainable development expert, Roger Levett, has highlighted the many 'feedback loops' which reinforce and worsen our dependence on cars, of the type:

More car journeys → more congestion → hostile road environment → people avoid walking and cycling → unfitness, obesity → more car journeys

But it is possible to break into a set of virtuous circles that move away from car-dependence, in which actions to make walking and cycling more attractive, improve bus services, encourage town centre living and so on act in a reinforcing way to enable car *in*dependence and fewer car journeys, as shown in Figure 3[81].

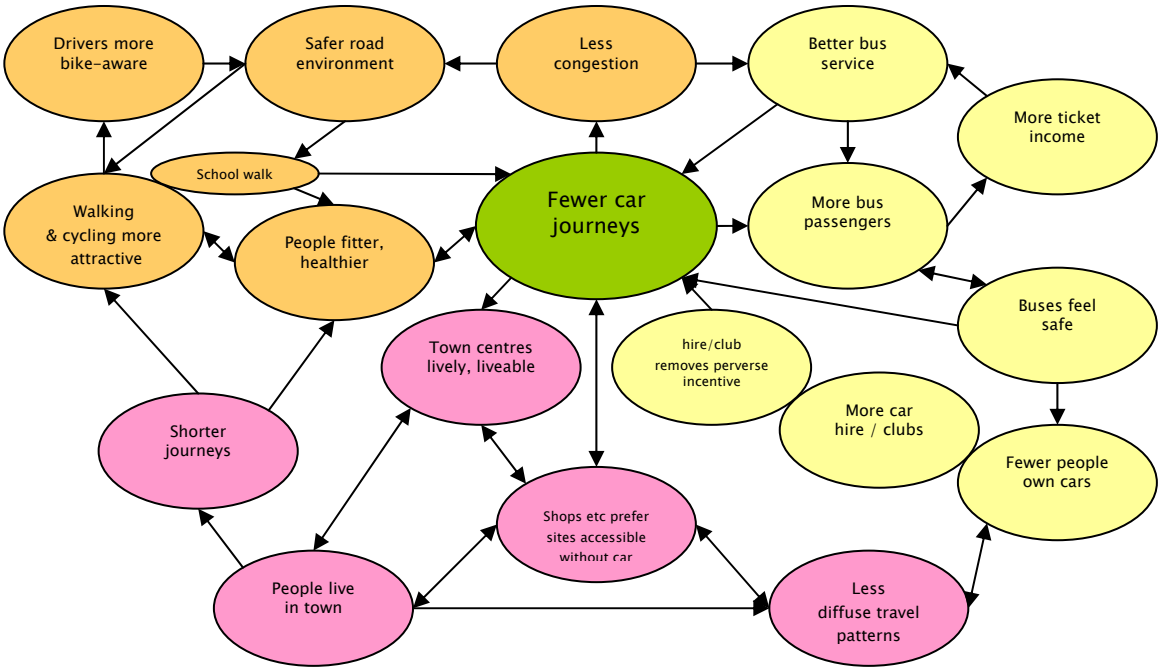


Figure 3: Virtuous circles of decreasing car-dependency

(from Roger Levett, Levett-Therivel sustainability consultants, roger@levett-therivel.fsnet.co.uk)

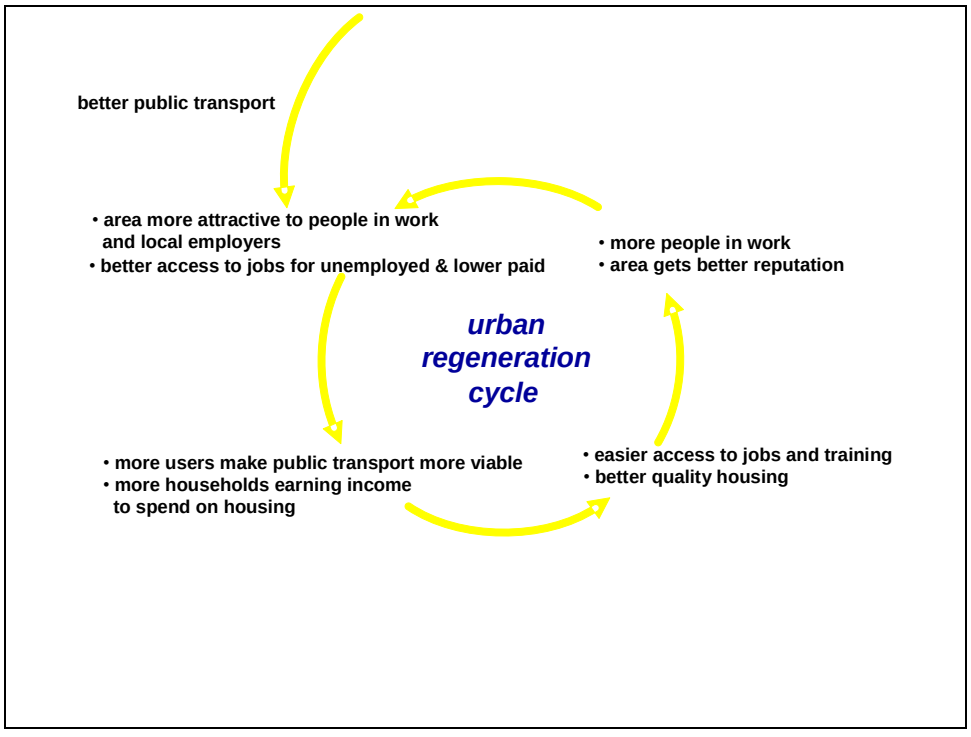


Figure 4: Urban regeneration cycle

(modified from Alan Wenban-Smith, Urban and Regional Policy, alanwenbansmith@pobox.com)

Planning and development specialist, Alan Wenban-Smith, formerly responsible for transport, planning and urban regeneration in Birmingham, argues that this self-reinforcing system may be a stimulus to a broader cycle of urban regeneration (Figure 4)[82]. His work suggests that solutions of the type documented in this report – such as less car-based town planning and better non-car options – offer a far more effective path to regeneration of depressed urban areas than the old roads-based approach. Equity of access to vital facilities through good public transport and cycle routes, coupled with a better local street environment, creates the 'feel good factor' which attracts residents and businesses. This leads to more investment and more jobs.

This should not surprise us. John Whitelegg, professor of transport and sustainable development, sums up the importance of environmental quality (as opposed to investment in roads) in generating economic success as follows:

The debate about road capacity and economic stimulus is firmly located within a completely outdated and inappropriate conceptualisation of economic activity and industrial location theory. Regional development theory and industrial location theory has its roots in a material intensive phase of industrial activity where transport costs were far more important than they now are and where manufacturing was the dominant economic activity. In the late 20th century this is no longer the case. Many local economies have ceased to be dependent on the flow of materials as a major component of their economic life support systems. Their locational decision making and their strategic thinking are dominated by the availability of skilled and/or professional labour, by the availability of good schools and attractive housing and by a number of 'feel-good' factors related to environmental quality and the availability of rich cultural, social and recreational opportunities. Dominant flows now consist of information, ideas, technology and innovation and a highly motivated and flexible labour force attracted by a high quality environment will be an important factor in economic success[83].

5.6. Why is transport policy still heading the wrong way?

So, if it is possible to achieve easier access for all, to protect our society and economy against the combined future shocks of oil-scarcity and climate damage, and to get better quality local environments and better health, why aren't we doing more of it?

The answer lies in two main factors. Firstly, it is necessary to achieve a threshold level – of public transport, or in the quality of the street environment – in order to break into the virtuous circles of increasing use of public transport, walking and cycling and corresponding decreasing car use. This implies public expenditure, and moreover, in the case of new developments, expenditure which must take place before residents move in and resort to cars when faced with as-yet-absent alternatives. Provision for vehicles is a heavy drain of expenditure that could be spent on non-car options – whether by governments, businesses or individuals – and in addition physically militates against provision of street space for walkers, cyclists, buses, or trams (or indeed for nice and useful things such as play-areas, trees, flowers, cafes). The cost to the public purse of Porth relief road in the Rhondda was £98 million for just five miles, nearly £20 million per mile[84], and proposed widening of the M25 is forecast to cost £79 million per mile[85].

Secondly, car dependence is difficult to tackle because it falls into a category of behaviours that psychologists term 'social traps': an immediate benefit to individuals, in this case from unfettered car use, leads to a disbenefit to society at large and in the longer term even the individuals concerned – in this case, clogged roads, a degraded environment, distant facilities and impoverished public transport. These problems, as discussed before, tend to particularly hit the least well-off.

Political leadership is needed to overcome these factors. But governments seek to avoid the tag 'anti-motorist' and so have continued spending on schemes which favour driving. The 'motorist=voter' mind-set misses the fact that no one is a motorist all of the time. All motorists are also pedestrians at other times, and many are also users of buses, trains and bicycles, as well as

wanting to live in environments that are safe and pleasant for themselves and their families. Moreover, when drivers are surveyed, about half say they would prefer to drive less and of these, over a third say they already make some effort to curtail their car use[86].

Whilst political leadership is required to re-allocate resources away from cars and roads, it should also be recognised that there is an economic and political gain to be had as a less car dependent and carbon-intensive transport system translates into an economy that is less vulnerable to oil shocks. And, of course, this low-carbon approach to planning and transport will also help contribute to stabilisation of greenhouse gases in the atmosphere.

The next section outlines recommendations for political action to achieve a socially just and lower carbon transport system.

6. Immediate recommendations to move towards a socially just transport system

Change to our transport system is overdue. This section identifies practical actions that can be taken now to make the transport and planning system more socially equitable, healthier and more sustainable in the face of increasing oil scarcity. The examples described in this report demonstrate that steps to achieve these three objectives can reinforce one another.

Although predictions of constraints in oil availability do show a range of timelines, time is short considering the lead-times inherent in some of the transport changes required. The question now is not *whether* change is urgent, but *how* to make the necessary changes.

These recommendations are necessarily at a strategic level, concentrating on the broad principles to make the mainstream transport and planning system serve society more fairly and more sustainably. As such, they do not deal specifically with topics such as improving dial-a-ride and taxicard services for older and disabled people, which might properly be thought of as a matter of social justice. However, we acknowledge the importance of these services as part of the mix of public transport provision. We also emphasise the importance of any transport programme inspired by principles of social justice paying special attention to the needs of the most vulnerable people in our society.

1. Small-scale writ large: initiate a major programme of small-scale and 'smart' measures to improve non-car transport choices

Small-scale writ large means thousands of small-scale improvements in transport infrastructure and services spread right across cities, towns and rural areas.

A 'small-scale writ large' programme should include:

- Re-design of residential streets to improve the environment for pedestrians, children at play, and cyclists, including widespread well-enforced speed limits of 20mph or less, for which 'intelligent speed adaptation' technology (i.e. speed limiters) will soon be a valuable tool.

- Investment in a step-change in bus provision aiming at reliable high-quality high-frequency rapid-transit bus networks in urban areas, supported by extensive bus-priority measures, and a combination of frequent main-route bus services and demand-responsive provision to more rural areas..

- Tackling cost barriers to bus use, particularly in rural areas where everyday trips may involve significant mileages and formidable daily fares. Higher public expenditure is required, coupled with targeted promotions of better services with lower fares, service efficiencies such as demand-responsive off-peak provision, and discounted fares for people on low incomes.

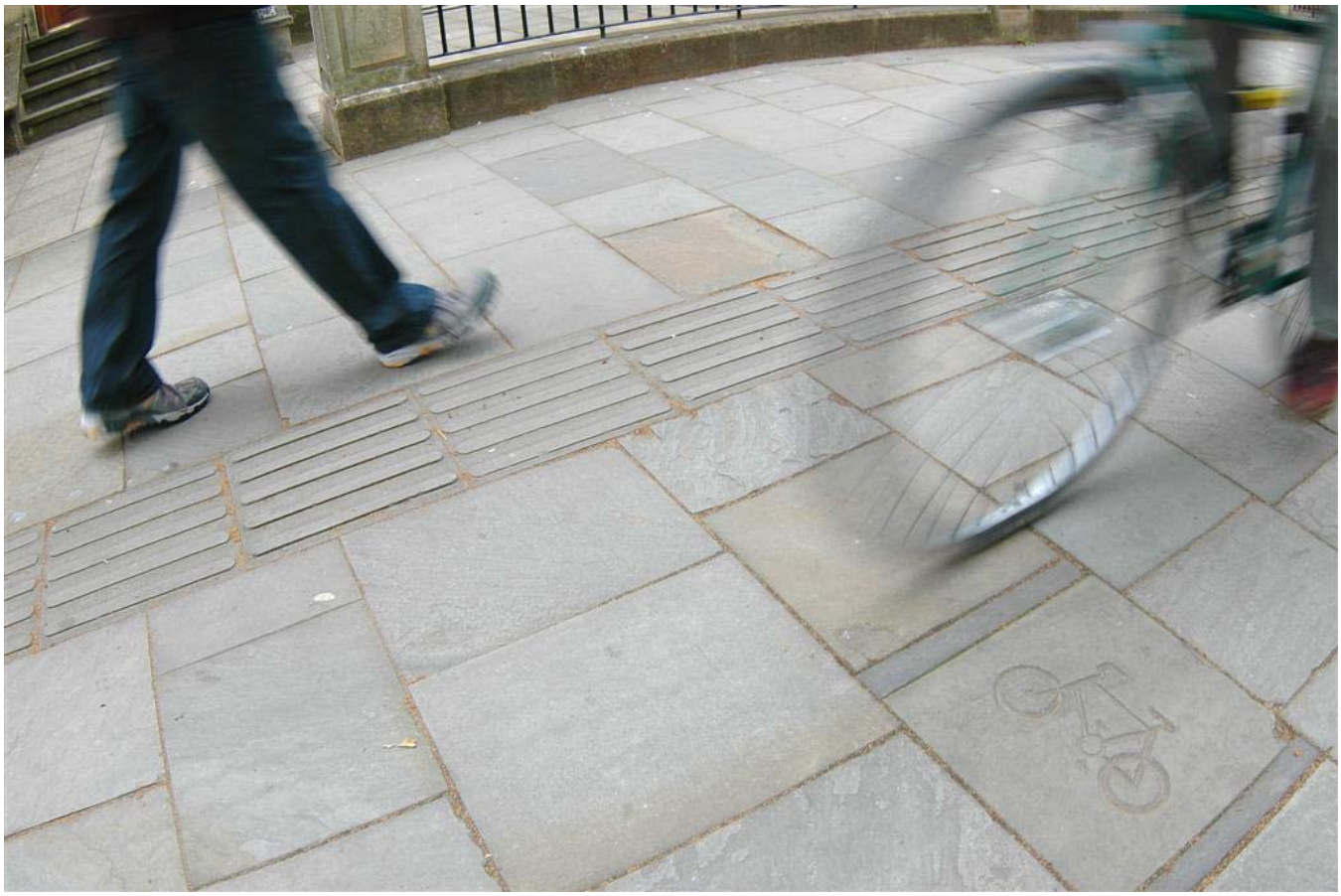
- Development of safe routes to schools networks around every school supported by training and information.

- A programme to make the existing road network cycle-friendly and to put in place dedicated pedestrian and cycle core routes to enable most trips to be made on foot or by bike (which will require off-road greenways, main road cycle tracks in both urban and rural areas and routes using quiet minor roads).[87]

- A large-scale ‘smart choices’ programme to publicise and promote these improvements in non-car alternatives and stimulate travel behaviour change, through personal travel planning and support for workplaces, schools, leisure centres and other destinations to improve non-car access options to their sites.

- A progressive programme of road capacity reallocation towards more efficient use in congested urban areas, backed by congestion charging.

- Reallocating parking space and road space to enhance civic environments.



An extensive and thorough ‘small-scale writ large’ programme is affordable within present transport budgets. In previous work, we have estimated that the spending required for an effective nationwide programme would be of the order of an additional £40 per citizen per year (in addition to present expenditure on these sorts of measures)[88]. This would be small in comparison with current budgets for roads, discussed below.

A small-scale writ large emphasis also requires that, compared with present budgetary allocations, a higher proportion of transport spending should be directed to revenue spending rather than capital spending.

The ‘Smarter Choices Report’[89] has demonstrated the exceptional value offered by ‘smart’ transport interventions that promote better use of existing infrastructure and the Eddington Transport Study has noted that small schemes, including walking and cycling schemes, tend to bring some of the highest returns[90].

2. Make new developments more accessible and less car dependent

The present phase of major house building is an opportunity to achieve higher standards of accessibility and less car dependency. There is a danger that this opportunity will be missed unless guidelines are adopted at the master-planning stages of development. Planning policy guidance should require regional authorities, local authorities and developers to adopt the following master planning checklist for all new housing developments[91].

Master planning checklist for new housing developments:

- Non-car-dependent location (*not* close to motorway junctions or high speed roads)
- Good quality frequent public transport services
- High development densities
- Good range of local facilities available
- Street design to favour walking and cycling
- Limited car parking provision, and some car-free housing
- Implement 'smart' programmes to change people's travel behaviour

A critical element of designing streets to encourage walking and cycling – also applicable to existing street layouts - is to ensure easy direct access on foot and by bike whilst preventing direct cut-throughs (or rat-running) by motorised vehicles. This concept is known as 'filtered permeability'. The traffic-restricted sections that act as 'filters' can be designed to facilitate public transport access through bus-only linkages, if necessary enforced by measures like automatic drop-down bollards.

A modal shift target should be set for all new developments. As an example, Northamptonshire council has recently adopted a Modal Shift Strategy which states that new housing developments must achieve a minimum of 20% modal shift away from car trips in comparison with housing in nearby areas[92].

3. Redirect spending away from road schemes

Although a small-scale writ large programme is affordable within the present transport budget it does require that expenditure be restructured. The £40 per citizen per year needed to accomplish a small-scale writ large programme is modest in comparison with budgets for roads. The total Highways Agency budget for 2007-8 is £127 per English citizen, of which only £17 per citizen is earmarked for maintenance, and this figure does not include spending on roads by local authorities[93]. The Scottish Parliament plans to spend £75 per citizen on motorways and trunk roads in 2007-2008, also excluding local authority spending on roads[94]. The Welsh Assembly budget for all types of road for 2007-8 was forecast to be £200 per Welsh citizen[95]. Northern Ireland has been spending an average of £154 per citizen on roads in recent years[96].

These road budgets continue to allocate monies to major road projects that, on the evidence of past schemes, will tend to generate more traffic and lead to further car-dependency[97]. These projects should be cancelled and the funding re-allocated to a small-scale writ large programme that will help improve transport justice and create a transport system better insulated against potential oil shocks.

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