

# Energy and Transport

## Re-designing our need to get around

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**Although transport is the average individual's third largest use of energy (after food and housing), the transport sector is the largest user of energy in the UK economy. Peak Oil will hit the transport sector first, and hardest. This briefing looks at how energy depletion will affect our transport system and the underlying problems with our demand for transport today.**

### The scale of energy use for transport

Transport is the largest sector in the UK energy economy – representing 36% of energy consumption (see graph below) and 22% of carbon emissions. In 2007, 99% of all the fuel used for transport in the UK was petroleum – 1% was electricity, and the use of renewables/biofuels was so small that it didn't show up in the governments' annual energy statistics.

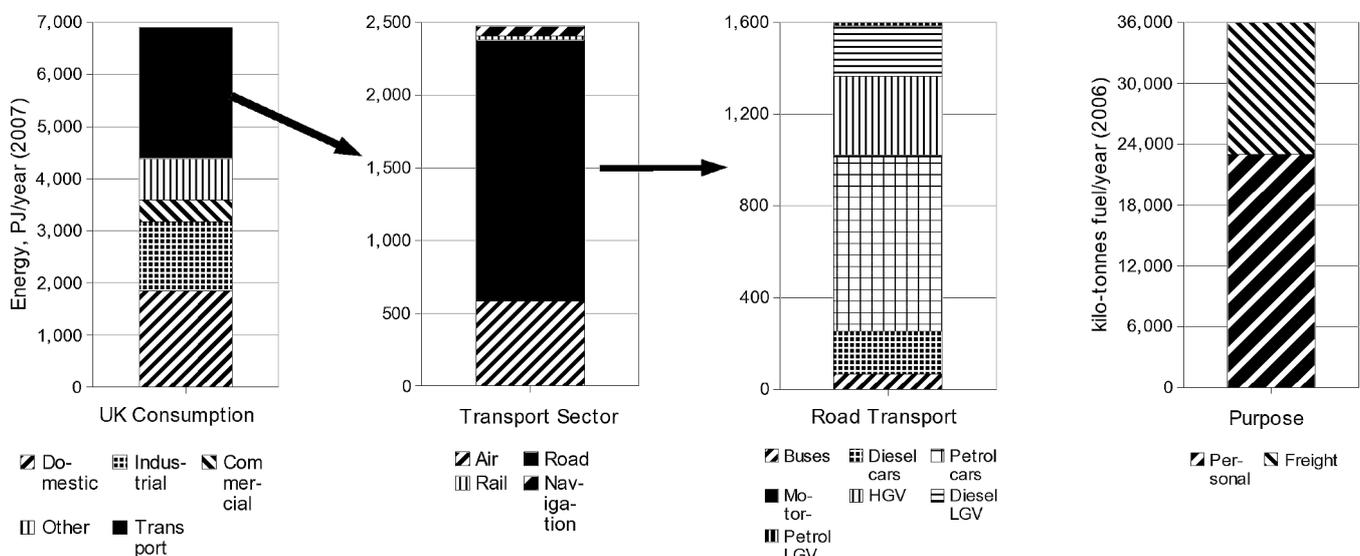
Cars are the dominant form of mechanised transport in the UK. However, because they are relatively small, fuel efficient, but more importantly because the average car is only in use for 5% of the time (other vehicles tend to be in use for a far greater period of time), they consumed 42% of the energy in the transport sector as a whole (and 59% of road transport). The other major areas of fuel use are freight transport – heavy (HGV) and light (LGV) goods vehicles consumed 27% of the energy in the transport sector (37% of road transport) – and air transport (24% of energy in the transport sector).

Clearly, if we are going to see a peak and decline in the total volume of petroleum fuels, accompanied by a steep rise in prices, then the fact that 99% of the transport energy in the UK is petroleum-based is, to say the least, problematic. As we approach the peak in global oil production we'll see a reduction in the

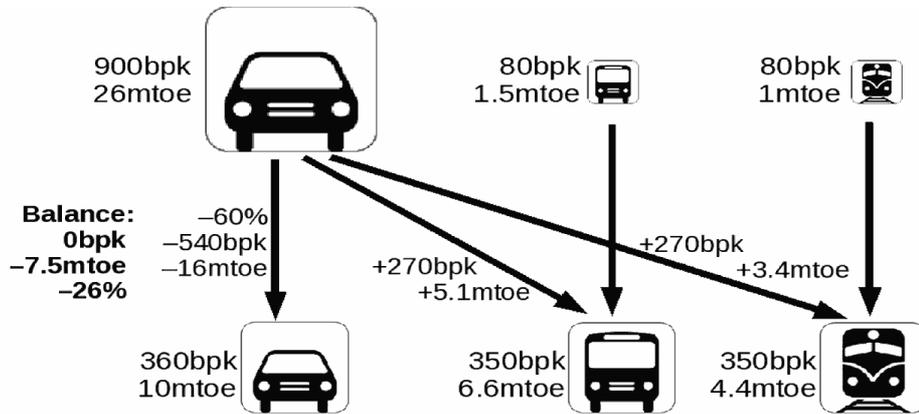
use of motorised transport because of the rising price of fuel – it'll just be too expensive to drive. This has already been demonstrated as, looking at the initial data for 2007, energy use in road transport and the level of traffic congestion across the UK has fallen over the past year. This also increases transport costs, raising price of food (see sheet E8, *Food, Agriculture and Energy*) and other commodities.

At the moment the continued growth of oil consumption is being supported by the 'destruction' of demand in other places (people, especially in the developing world, can't afford to buy oil any more). Ultimately the decline of oil production must lead to some form of rationing because demand destruction can only deliver a certain amount of spare capacity (unless oil prices collapse the global economy, in which case recession will cut demand). The rationing of road fuels has already been agreed through the International Energy Agency (IEA). In March 2005, at a conference entitled *Saving Oil in a Hurry*, various informal policies on rationing (e.g., reduced speed limits, or restrictions on the sale of fuel) were adopted by IEA member states (including the UK) to be applied in the event of a sudden shortfall in global oil production.

**Transport in the UK Energy Economy**



The first graph above shows the energy used in the transport sector as part of overall energy consumption in 2007. The demand from each transport mode is shown in the second graph. Then (based upon 2006 data as 2007 is not available) the use of energy by road transport is shown in the third graph. Finally, the fourth graph shows the purpose of energy use in road transport.



**Cutting the use of cars by 60% and moving demand to buses/trains only cuts the energy consumption in road passenger transport by 26%**

### The Net Energy of Reducing Car Usage

This diagram shows the effect of reducing car use by shifting the demand into public transport (whilst maintaining the level of mobility). In 2003, cars were used for 900 billion passenger kilometres (bpk) of travel in the UK, and consumed the equivalent of 26 million tonnes of oil (mtoe); buses and trains went just 80bpk each. If we cut car use by 60%, and shift demand to buses and trains, all that does is even up the modes – more importantly, it only saves 26% of the energy used by vehicles.

### The Demand for Transport and the Car

Today there are around 30,000,000 cars licensed on the UK's roads. As road space is not increasing at the same rate congestion is increasing (until the recent rise in fuel prices!). Data from the National Statistical Office (NSO) shows that, between 1982 and 2003, the cost of driving a car fell by 5.2%. At the same time the average household disposable income rose by 118%. Over the same period the cost of bus fares rose by 71%, and rail fares rose 84%. So the use of buses and trains continues at a low growth rate because we can afford the large price rises, but car transport has grown faster because it has become comparatively much cheaper.

### Hypermobility

If we look at the whole transport situation, the greater problem is not the car, but more specifically *hypermobility* (the ability to travel whenever, and where-ever we please). It's our desire for instant travel, embodied in the car, that's driving consumption. As noted by the transport researcher Professor David Banister, "Any increase in car ownership is likely to result in more urban sprawl, greater consumption of land for transport, and more material consumption overall."

In Britain (2001) 74% of households had the 'regular use of a car', and 28% had two or more cars. This fundamentally is the problem with transport in the UK – there are so many cars, and the relative cost of driving is so cheap, that people just take the car rather than walking or taking some other mode of transport. Data from the NSO for 2003 shows that the average person takes 998 trips/year, including walking and cycling – 410 (41%) of those trips were taken as the 'driver' of a car, and a further 228 (23%) were taken as the 'passenger' (so 64% of trips, or 65% including taxis, are car-based).

In the UK, 75% of all car trips are less than 8 kilometres in length. Many of these trips could be taken by foot, or bicycle. The usual policy solution to this problem is to reduce car use and get people to use the bus or train instead. This not only misses the point that the majority of the 998 trips the average

person takes each year are very short, it also ignores the fact that shifting from one form of mechanised transport to another (called 'modal shift') only saves a fraction of the energy. As is shown in above, if we get rid of 60% of all car trips and shift the distance travelled to buses or trains it would only save 26% of the energy consumed. The problem is not the car, it's our desire to use mechanised transport!

### Transport Alternatives

At the moment there are many alternatives on the transport agenda – *except "less" transport*. More than any other option we have to de-mechanise our demand for movement. However much of the emphasis, even amongst those planning for a reduction in future oil supplies, seems to be developing the same, or more, access to transport using other forms of motive power.

As stated by the transport analyst Professor John Whitelegg: "Technology reinforces a deep seated desire to reject anything that looks like 'eco-doom' and continue the 'business as usual' scenario... perpetuating the myth that 'in the end it will be all right'. In the end it won't be all right. It isn't all right now unless widespread social inequity and poor air quality warnings on sunny days are 'all right' and technology is unlikely to deliver a zero speed, zero mass, zero noise vehicle that has zero effect on health, community and land take."

It is impossible to produce a zero-emission car – the Laws of Physics prohibit it. 'Carbon neutral' is also a fallacy – there isn't enough land in the world, let alone the UK, to grow the biofuels to replace petroleum (to grow sufficient biofuel in the UK, just to fuel the cars, would take the UK's entire land area).

In an age of depleting energy supplies the overall efficiency of each transport mode is the most important issue. In this sense the only truly sustainable modes of transport are non-mechanised – walking and cycling. When we look at each individual's use of energy transport is significant, but it's still less than the use of energy in our food and housing. 'De-mechanisation' is ultimately the simplest solution to our demand for energy to move around.