The Impacts of Personal Transport

Cars versus public transport. The problems with flying. Our 17 Challengers report on their transport emissions.

How Important is Transport?

Personal transport is, without doubt, the source of emissions that varies the most from person to person. Travel accounts for a third of an average person's emissions - 1.6 tonnes of carbon dioxide (CO2) for land transport, 1.97 tonnes for air travel. But the personal variations are so great that the ?average' person really doesn't exist. Some people pass their lives without travelling more than 100 miles from their home. Some people commute long distances daily to work. And some people are addicted to recreational air travel.

How do Different Forms of Travel Compare?

Buses and trains have by far the lowest emissions per passenger mile when full. But providing a regular transport system outside peak hours requires that many trains and buses run virtually empty. Averaged across all the trains on the British networks, each passenger mile produces 100 grammes of CO2. The emissions for urban buses, which stop and start constantly, are higher still.

By comparison cars, which are only used when needed, have lower average emissions per passenger mile than either buses or trains once they have three people in them. There are still plentiful reasons for avoiding cars - pollution, safety, health, reclaiming public space, and, not least, the 5 tonnes of CO2 produced in the manufacture of each car (which we will discuss next issue). And, of course, the more we use the public transport, the more efficient it becomes. All this being said, cars, when used in moderation and with high occupancy, are not necessarily the climate evil that environmentalists assume them to be. The key differential is how far people travel. People who commute long distances by train soon run up far higher emissions than people who use their cars moderately.

Flying is a far greater problem. The industry argues that flying is a form of public transport and people on a long distance economy flight (admittedly crammed in like sardines) burn less fuel per mile than they would if they were driving a car alone. Not quite true -short haul flights use two to three times as much fuel per mile. And not a very fair comparison- flying is so cheap and fast that we can casually travel distances that would be daunting by land transport. How many people would drive to Thailand for a week's holiday?

But there is an yet bigger problem intrinsic to jet engine technology. Jet engines produce nitrous oxide- a powerful greenhouse gas- and vapour trails, which multiply their climate impact three fold (see www.grida.no/climate/ipcc/aviation for the data). You can calculate the real impact of your flight at www.chooseclimate.org/flying

And a word of warning for anyone romanticising the age of the liner ? boats are not much better. Because people need far more space and facilities for a week's journey, a cruise ship burns just as much fuel to cross the Atlantic as a plane. The smoke is also extremely high in carbon particulates which multiply the climate impact yet further.

Travel Emissions of the Carbon Challengers

The average British person emits 1.6 tonnes of C02 from land transport and just short of 2 tonnes from air transport- around one third of our total emissions. If we maintained this proportion within the Carbon Challenge sustainable limit of 2.5 tonnes, transport emissions should account for no more than 0.85 tonnes per person.

The three factors that pushed the Challengers over this level were flights, commuting to work, and low car occupancy. Making just one flight tripled the emissions of two of our households (George and Annie, Theo and Shannon). Commuting to work also had a marked effect. Tony's part time train commuting from Salisbury to London uses up most of his emissions allowance. Even shorter commuting soon adds up to major distances. Sami's daily 28 mile bus journey produces over a tonne of CO2; not surprising if you consider that if it was all in one direction he would end up in Tokyo!

Among the Challengers who drove the number of people using the car turned out to be more important than the mileage. Peter, as a single car user, uses up his whole emissions allowance. Theo and Shannon, sharing with two other musicians, almost keep it within a sustainable level.

Providing one avoids these pitfalls, it is not hard to come well short of the transport target. Adam, a new Challenger, managed to keep his transport emissions down to just 10 kg, by cycling to work, not owning a car, and by avoiding plane travel. This might be hard for people living in the country (like many of our Challengers) but surely it is not an unrealistic lifestyle for the 40 million British city dwellers?

Tony Mallichan and Family ? Managing Family Needs

We live in Salisbury just 15 minutes walk from the city centre - a major consideration when we bought our house was to be close to schools, shops. By taking advantage of our local market (and farmers market) we have slowly reduced the need for the "large shop" - this again has reduced our car travel and also the miles that our food has had to travel to get to us! When car travel is inevitable we try to agree a single car lift based on most sensible routing - drop-off and pick-up can be shared between two consenting families.

My wife works in the city centre and walks to/from her offices. I work in London as a transport consultant for a global IT services company. I have chosen not to have a company car and instead do all my travelling by public transport (shock/horror!!!) - and I walk to/from the station. I also work from home at least two days per week. This adds 4 hours a day that would otherwise have been wasted travelling- and allows me time to do other more worthwhile things such as cooking the tea and sitting down with the rest of the family to eat it!

Transport emissions in 2002

Land Transport ? Large car: 4.3 tonnes CO2

Public Transport ? Rail: 2.2 tonnes CO2

Total transport emissions: = 6.5 tonnes CO2

Transport emissions per person: = 1.3 tonnes CO2

Comment

Tony and his family have tried hard to keep their emissions down and have done well to avoid flights. Although their car gets heavy use, the emissions are shared between five people. A more fuel efficient car would bring emissions down further still. Tony's main problem is the long train journey to London and it is hard to think of any way that he could reduce this further without living closer to work.

Mark Luntley and Alice Brander ? Commuting by Rail

Two years ago we lived apart and flew each weekend. Our CO2 emissions were huge. Then we bought a house in Oxford city centre and I now walk to work whilst Alice currently commutes daily to Reading by rail. Over a year this generates 1,350 kg of CO2. Alice starts a new job in December in Oxford and will then be walking to work.

We still have two aged cars (a hangover from when we lived apart). Our Fiat Panda does around 600 miles a year, but since April we have driven 5,700 miles in the Volvo 850. This was in spite of driving more slowly on motorways and reducing runs around town. Travels comprised one work trip, three visits to relatives and our summer holiday - which this year we took in Cornwall (no flying). So should we trade in our two older cars for a fuel efficient new car? What do readers think?

Transport emissions in 2003

Car ? Fiat Panda: 0.15 tonnes CO2

Car ? Volvo: 3.25 tonnes C02

Train 1.35 tonnes C02

Flights: 0 in 2003 (3.38 tonnes in 2002)

Total transport emissions: 4.75 tonnes CO2

Transport emissions per person: 2.37 tonnes CO2

Comment

Mark and Alice have dramatically reduced their emissions, largely by cutting out flights, but their transport emissions are still high. Car emissions have risen as they have substituted car travel for flights; it's a a big improvement but clearly getting a more efficient car could make a difference. Alice's daily rail journey clearly shows how commuting, even by public transport, soon clocks up

emissions.

Peter Richardson ? A Rural Small Household

Overall, I travel relatively little, partly because I work from home, and partly because I try to avoid unnecessary journeys and rarely go on holiday. I don't fly. My short local journeys (under 3 miles) are virtually all on foot or bike. Longer local journeys, except in summer, are usually by car. Living in a village outside Milton Keynes, it's a 15 mile round trip to the city which I drive probably 4 times a week, mostly for activities connected with voluntary work. For longer trips, I try to use public transport where reasonable. My annual car mileage is about 8000, which makes me feel bad. My future transport plans include getting a diesel car and experimenting with making bio-diesel, and getting a Brompton folding bike to make journeys by 'un-integrated' public transport less difficult.

Transport emissions

Car: 2.45 tonnes C02

Public Transport: 0.1 tonnes C02 (approx)

Flights: 0

Transport emissions per person: 2.55 tonnes CO2

Comment

Peter tries hard to keep his travel down and manages to avoid flights. As with his domestic emissions, the reason his emissions are high is because they are not being shared. All it would need for him to keep in target would be to share his car journeys to town or use the bus a little more.

Geoff & Jane Dey ? The Super Efficient Car

We "need" 2 vehicles for our jobs . Both of us are part-time and self-employed ? Geoff is a musician and Jane runs a small cleaning business. We gave up cycling since Jane was in a hit and run , and walk wherever possible. We used to have one car but last winter Jane got knocked off her bike. So we now have two .The upside is that we are using less fuel than we were because the new car is a a small French Aixam ? a very light car (plastic body panels and aluminium chassis) with a 479cc diesel engine which can do 95 miles to the gallon (see www.aixam.co.uk). We can't remember the last time we went on a bus or train and we haven't been on a plane for about 3 years.

Car one (Corsa): 1.4 tonnes CO2

Car two (Aixam 500): 1.5 tonnes CO2

Bus/Train/Plane: 0

Total transport: 2.9 tonnes C02

Transport emissions per person: 1.45 tonnes CO2

Comment

Once again Jane and Geoff do remarkably well. They have avoided flights and commuting and, although they have a high mileage ? nearly 17,000 miles ? they have minimised the emissions with a highly efficient car. What is more, because their other emissions are so low they can accommodate their transport emissions and still keep within the Carbon Challenge Target.

Sami ? Buying Offsets for Work Flights

I commute approximately 28 miles (round- trip), currently by bus or by train with a bike but will soon be taking my driving test so expect my emissions to actually rise considerably. In addition to the daily commute, work also involves a large amount of international travel, something that is currently unavoidable if we are to compete with the larger publishing houses. I have tried to take land travel options where possible. I also have family in Finland and last year had to make two visits. I currently use a "carbon offset" service offered by Climate Care although I am cautious as to whether I am effective buying a licence to pollute, something I would see as counter productive.

Transport emissions in 2002

Bus to work: 1.2 tonnes

Train ? 2400 miles: 0.28 tonnes

Lifts / taxis ? 600 miles: 0.22 tonnes

Flights in 2002

Two personal flights to Finland: 3.4 tonnes CO2

Work flight to Finland: 2.3 tonnes CO2

Work flight to USA: 4.1 tonnes CO2

Work flight to Singapore: 7.9 tonnes CO2

TOTAL: 20.2 tonnes CO2

Comment

Sami shows how even medium distance commuting by bus can soon clock up emissions. Sami's real impact, though, is from his flights which take him six times over the Carbon Challenge limit. The big issue here is whether emissions produced for work travel should be included in Sami's personal emissions or whether it should be shared among the people who buy the books he publishes. We will discuss the arguments for both positions in the final Carbon Challenge article in Summer 2004.

The Value of Carbon Offets

Companies offering to soak up one's emissions are the consumer face of a much larger international industry allowing companies and countries to buy their way out of emissions reduction. As Sami says, there are serious concerns that this discourages real change in behaviour. The fact is that burning fossil fuels will always add to the amount of carbon in the carbon cycle. Most companies offer to plant trees, which may, through their short term carbon storage, slow the cycle down a little. However the overall problem of that additional carbon remains. Some scientists are now arguing that forests will, under some of the predicted future climates, stop functioning as a sink altogether and become a net source of carbon. Given this, many of the claims of the offset companies are dubious and based on poor science. The phrase "Carbon Neutral" which has been trademarked by Future Forests, is extremely misleading. All this being said, the projects funded by the companies are often worthwhile in their own right; Climate Care, which Sami supports, has some of the better schemes and also funds energy efficiency and forest conservation projects. On the other hand you may want to simply give a donation directly to an organisation doing energy or forest conservation work, or invest in reducing your own emissions elsewhere. Personally I sell and give away lightbulbs ? see below. What do readers think?

George and Annie (and baby Elsa) ? The International Family

We don't have a car and George's office is ten minutes cycle ride from the house. Unfortunately we are starting to find it harder and harder to transport our growing family (one toddler and baby due soon) on the appalling public transport system. We have major misgivings about becoming car owners and will probably share or rent a car and use it very rarely. Our main problem is that Annie (and now Elsa) is a US citizen and we need to fly occasionally to visit her family and friends. In 2002 we flew once to New York, but have avoided it so far in 2003. . Our response is to give away or sell low energy lightbulbs. Over its lifetime the energy saved by each bulb, compared with a standard bulb, would have produced half a tonne of CO_2. We give them to friends and George sells them for cost when he gives talks on climate change (we reckon that there is a better chance people will use them if they pay something!). We buy them for only £2 each at Ikea and so far we have shifted around 200- that's a hundred tonnes of CO_2 saved! We

are very clear that this does not give us a license to fly whenever we feel like it.

Transport emissions in 2002

Train: 0.32 tonnes

Bus: 0.09 tonnes

Car: 0.09 tonnes

Flights: 7.8 tonnes

Total travel emissions: 8.2 tonnes

Travel emissions per person: 4.1 tonnes (not including Elsa)

Comment

Despite George's long train journeys for work activities, George and Annie clock up only a quarter of a tonne CO2 each for land transport which is well within any sustainable limits. However- horrors- just one flight overwhelmed their emissions from all other sources. There could be no better example of the inherent problems with jet travel.

Theo and Shannon

In the absence of a fully-funded and integrated public transport system, getting around continues to give us our biggest Carbon debt. It's not just that we live in an isolated rural area, but also our work as musicians, which leads to a heavy dependence on Diesel fuel. We tried taking the band around the country by train for a few weeks, but found it unreliable, unhelpful for moving our gear, and way too expensive. On the plus side, our Estate Car is packed to capacity with people and

instruments when we drive to gigs, which is quite efficient. We still need to make a transition to Bio-diesel, which could mean setting up a local co-operative, as there's still no mainstream suppliers. We've arrogantly calculated that our air-miles as musicians in the past might be offset by the overall benefit to the planet of spreading our music - but I guess that won't really hold up in the Carbon Court! This year we avoided all flights and spent 3 days and £600 to get to our Tunisian holiday by train and ferry instead of plane.

Travel Emissions in 2002

Car shared between four: 3.9 tonnes CO2

Theo and Shannon's share of car: 1.9 tonnes C02

Rail: 0.8 tonnes CO2

Flights to India for environmental campaign: 10.4 tonnes CO2 (two flights)

Total travel emissions: 13.1 tonnes C02

Travel emissions per person: 6.5 tonnes C02

Comment

Sharing a car brings Theo and Shannon's land emissions down to 1.4 tonnes which, though high, can be compensated for by their low domestic emissions (see last issue). Their figures show the problems with flying, though, as with Sami, the question arises as to whether work emissions should be their responsibility alone. Their trip to India was to support local farmers campaigning against GM crops and my view is that it would be terrible if people couldn't campaign effectively against multinationals because they refused to ever fly. But is this any better than anyone else's personal reasons an exception- what do readers think?

Welcoming New Challengers ? Chelmsford

Environmental Partnership

We are an environmental NGO based in Chelmsford. Our projects include Recycling (run by Linda), Travelshare (run by Adam), Home Energy (run by Daniel), and Richard is our General Manager. We're joining the Carbon Challenge to evaluate our own climate-changing emissions, and eventually to quantify the emissions reductions that we help others to achieve with our Home Energy Advisory Service.

Our Travelshare scheme is a web-based matching system for car sharers, it helps people to find others who make the same journey so they can arrange to share a lift. The scheme aims to tackle the twin problems of congestion and pollution as well as making it easier for the people of Essex to get around. The scheme has been developed locally, for local people and for the benefit of the local community - very much in the spirit of Agenda 21! We are currently in the process of expanding our system to cover other areas of the country - so you may see a Travelshare near you in the near future!

Adam

no car & bikes to work: 0.1 tonnes CO2

Linda

drives to work and did some flying for holidays: 8.7 tonnes

Richard

uses the car sometimes, one flight, bikes to work: 2.7 tonnes

Daniel

uses a mixture of car, public transport & motorbike for work but does some flying: 3.6 tonnes

Total emissions all sources: 23.4 tonnes

Total emissions from transport: 15.1 tonnes

Average transport emissions per person: 3.8 tonnnes C02

Comment

The difference in the emissions shows very clearly how different lifestyles contribute to different emissions. Flying, as usual, is by far the biggest variable, followed by car use. To be fair, though, the Chelmsford Challengers are taking full personal responsibility for all their car emissions and, given that they are professional car sharers, I assume that there are quite a few other people who could share a chunk of those car emissions!

Next Issue

In the next issue we take on the most complex issue of all ? emissions from food and consumption.