

Some key carbon literacy facts about personal transport

Sustainable Redland

What's in a footprint?

Working out the carbon emissions associated with different forms of transport is complex, because it depends on making full allowance for the energy used in making the vehicles or rolling stock, and in building and maintaining the roads, rails, ports and infrastructure. The allocation of all this energy to individual passenger journeys requires assumptions to be made about how many occupants are in each train/plane/car. It is therefore inevitable that quoted figures will vary widely. The 'embodied' energy (what it takes to make the vehicle etc) is critically important and often ignored. It takes 90 barrels of oil (on average) to make a car, more than the fuel used to power the car for its entire life.

Bristol's congested streets

Planning decisions in Bristol have for years been predicated on use of cars as the prime means of transport. This can change – as for example in Queen's square, where the diagonal highway was removed, transforming the space and the way it is used. Bristol's streets could be designed in a way that enables far happier sharing of the space so that people of all ages feel it is safe and pleasant to walk or cycle. One problem is that a staggering area of precious urban space is currently lost, being occupied by rows and rows of cars waiting for the occasion when their owner happens to need them. By use of car-clubs, car share schemes, and better bus and suburban train services this need for individual car ownership could dramatically reduce, freeing huge spaces for cycle routes and pleasant safe walking routes.

Walking

Embodied energy - nil

CO2 emissions –nil, except you breathe but if you stop this you are dead.

Other impacts – very good for health, saves all that driving to the gym to go on a walking/jogging/cycling machine. Also creates a virtuous circle for the way urban spaces are used and perceived - if urban spaces are full of ordinary people walking, they are seen as safer, so more ordinary people will walk.

Barriers – narrow pavements, fast traffic, dress code, perceived status.

Cycling

Embodied energy – building a bike uses the same amount of energy that it takes to drive a car for a few hours

CO2 emissions – as for walking.

Other impacts – very good for health. Cycling seems to bring out strong emotions in some individuals, and interestingly the view that cyclists are dangerous hooligans hurtling along pavements and endangering all in their path have been strongly articulated since bicycles first hit our streets in the 1890s. Lady cyclists at that time attracted particularly strong comment.

Barriers –worries about safety if cycles share road with fast cars and HGVs, hills (get low gears), weather (get good kit). Dress code and unwritten rules about status.

Cars

Embodied energy – substantial, the bigger and heavier the car, the more the energy to build it and to fuel it

CO2 emissions –*the conversion figures used by the national Carbon Rationing Action Groups (CRAGs) are 2.3 kgs CO2 produced for each litre of petrol, 2.7 kgs for each litre of diesel.* CO2 per mile varies depending on fuel efficiency. Large heavy vehicles have far higher consumption especially when driven in stop start city traffic.

Other impacts – congestion, use of space whilst parked, danger to pedestrians and cyclists.

Electric vehicles

Embodied energy – these vehicles tend to be lighter, with less embodied energy. Some enthusiasts have self-build vehicles.

CO2 emissions – depends on the source of power to create the electricity.

Other impacts – as for cars but many are smaller, quieter and go less fast.

Biofuelled vehicles

Biofuels are crops grown to make fuel. This avoids use of fossil fuel BUT ties up agricultural land and uses masses of water and pesticides. Forests are being cleared to give land for biofuel growth. Trees absorb CO2 so deforestation increases the CO2 build up in the atmosphere and accelerates global warming. Maintaining our current levels of energy use for transport through use of biofuels is a recipe for ensuring that humankind starves to death in a traffic jam.

Buses trains taxis

Travelling by all these means causes emissions, especially high speed trains. If it means you are not owning a car then on balance that has knock-on benefits for reducing city congestion. *A general conversion factor is used by the national Carbon Rationing Action Groups, this is 0.07 per kilometre or in other words 100 kilometres by public transport costs 7kgs CO2.*

Air travel

A litre of aviation fuel burned in the atmosphere causes about three times as much greenhouse effect as a litre of aviation fuel burned at ground level. This is known as the Radiative Forcing Effect and is partly because of other greenhouse gases emitted by aircraft including water vapour. *The conversion factor used by the Carbon Rationing Action Groups is that each kilometre of air travel produces the equivalent of 0.51 kgs of CO2, or in other words 100 kilometres costs 51kgs CO2.*

You will find that many carbon calculators on the web produce a figure far less than this, and tell you that by spending a very small amount of cash you can 'offset' the damage. These calculators are sponsored by the aircraft industry, and aim to reassure you that your flight will not really damage the earth's atmosphere and climate. We believe this is irresponsible as it ignores the radiative forcing effect, and it ignores the fact that offsetting is largely theoretical – the aircraft emission starts its greenhouse damage now, planting a tree will take a hundred years to begin to undo that damage.