

Carbon and us

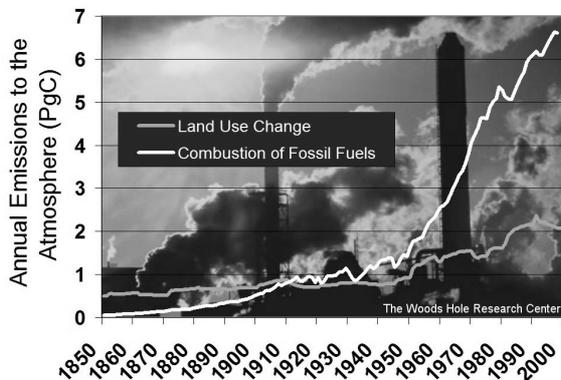
John and Fiona Earle

"We have not inherited the earth; - we have borrowed it from our grandchildren."
Ghandi

Do we believe that we need to put our affairs in order? Or do we say that it is pointless to try, as we cannot make any difference when others are doing the opposite?

The Background

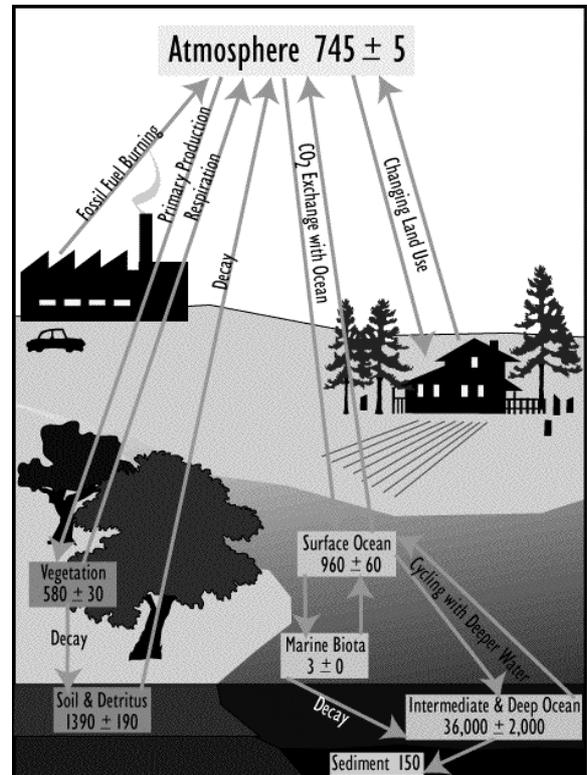
World emissions of carbon have increased from 2000 million tons (2000 MtC) in 1950 to 7000 MtC in 2000. In parallel, the atmospheric concentration of CO₂ has increased from 315 parts per million (ppm) in 1955 to 380 ppm in 2005. It is widely accepted, though sometimes grudgingly, that the climate change we are experiencing is man made. (Scientific reports are clear on this).



There is more to methane (marsh gas) than animals farting. We learnt about the problems of methane a year or so ago in geology evening classes in Ware. Unfortunately there are twenty miles and apparently many thought-years between Ware and the Cabinet Office.

Methane is formed by the action of micro organisms on carbohydrates under water. The carbohydrates are dead fish or vegetation. This has been going on forever. The methane forms a loose association with water, as methane hydrate. The water may be very cold as in the shallow Arctic Ocean, or frozen as in the tundra. As water warms or

ice thaws, the methane is released. It is a greenhouse gas about twenty times as powerful as CO₂ and it will linger in the upper atmosphere for weeks or a few months until it is converted into carbon dioxide (CO₂).



This is known as a positive feedback - the warmer the water the more methane released, which leads to further warming. However, if we can reduce CO₂ production, thus reducing the rate of climate change, we should reduce methane production from seas and the tundra.

There must be a point when we can no longer restrain climate change and that time is probably closer than the Government wishes to think.

What we need to do

We need to understand how our emissions occur, how to reduce them, and how to use energy more wisely. The figures quoted in this article are derived from a well-researched book called "How we can save the planet" by Mayer Hillman. It is published by Penguin in paperback and is ISBN 0-141-01692-2.

For the UK Hillman divided the total energy used into: Transport - 35%; Domestic- 30%; Industry - 22% and Services - 13%. Curiously the energy supplied to trains is put into Services alongside lighting and heating shops, schools and hospitals, and providing power to computers in banks. Transport mainly deals with car and lorry use - not only the journeys we make personally, but the journeys we cause others to make. This includes transport of food and other products. Air travel is seen as a separate entity - it was not considered at all at Kyoto.

Household energy and us

Domestic energy use can be divided into space heating (about 50%), water heating, and electrical appliances. Obviously there is a lot of variation between, for instance, a family with children, each of whom may have a heated bedroom and a television, and a single person household.

In 1970 we accepted houses at a room temperature of 13°C. Nowadays we like our homes to be at about 19°C. In round figures each extra degree calls for about 10% more energy. Oddly, we prefer to pay the extra rather than put on an extra fleece, woollen sweater or thermal vest.



The most effective way of restricting energy loss is by putting plenty of fibreglass in the roof. Thorough insulation.

We first put solar panels on the roof for water heating some 30 years ago. The modern vacuum tubes are far more efficient and have provided us with almost total hot water from April/May to September/October, with a slight boost on cloudy days from oil or electricity. On a clear day in February, at 11.30 am, the solar temperature in the tank was 50°C and rising. There was still frost on the ground.

We have just learnt that the Chinese are making vacuum tubes, and a friend is installing a system for under £3,000. Last year the price quoted by one firm was around £6,000. Obviously installation would be cheaper if planned from the beginning for a whole new housing estate.

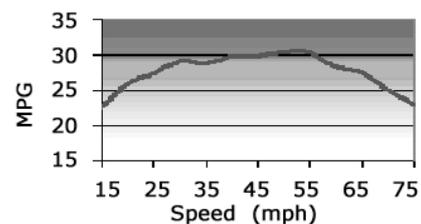
Transport and us

In 1970 there were 11 million cars on the road, and just over half of all households owned a car. Now, there are 23 million cars and a quarter of all households own two. This means more emissions and can be a hazard to walking and cycling. We construct our roads for cars and lorries.



Another social change has been the growth of out of town supermarkets selling a wide range of foods and goods, rather than high street stops selling more local food, hence longer journeys to buy food and for food to reach those supermarkets.

In round figures, a petrol-powered car emits about 1 kilogram (1Kg) of CO₂ per 5 kilometres driven. This works out as about 1 tonne CO₂ per 3000 miles. A diesel car travels about 5000 miles per tonne of CO₂ but discharges minute carbon-containing fragments, called particulates, that can affect lungs.



Fuel use varies with speed. Travel at 70 mph uses about 30% more fuel per mile than travel

All Saints Alive

at 50 mph. Lower speeds are directly related to fewer and less severe accidents. Sharp braking and acceleration uses much more fuel than smooth driving.

Other things that add to fuel use are carrying heavy loads, roof racks, and tyres that are not properly inflated.

Planes and us

Aeroplanes emit CO₂ and oxides of nitrogen into the upper atmosphere. At ground level, CO₂ may partly dissolve in water and be taken up by vegetation. In the sky, this cannot happen. In round figures one tonne of CO₂ emitted by an aeroplane is equivalent to 3 tonnes at ground level.

In the UK (we quote Hillman) "Total passenger kilometres flown from airports have risen from 120 BILLION to 260 BILLION. This is the equivalent of each person flying nearly 3000 miles per year. Most of this is tourism. Air freight has risen by 9% per year since 1990." If our airports are extended (to bring in more airport tax), then this will outweigh any carbon savings we make in other areas.

Brighter news

It is not all doom and gloom. Hybrid cars have been on the market for several years, and the market is ready for more. They emit less CO₂ per mile than others. Low energy light bulbs of all styles are obtainable now, even for dimmers. Solar panels are less expensive. Our housing insulation is improving.



But we need to think of improvements up to a standard rather than down to a price, if we can afford it. Who knows, the Gulf Stream has slowed, and could cut out, and we are in the same latitude as Labrador. We may need to think more carefully about products that last rather than buying new replacement items - each item has a production requirement of energy.

John has recently met individuals who, following David Attenborough's programme on Climate Change, are desperate to reduce their personal carbon use for the sake of their children. For some, the will is there. At the time of writing (mid February) the Government is silent.

Our children and grandchildren may be politely quiet now, but in 10-20 years will they say "Well, at least you tried", or will they say; "You knew what was happening, and did nothing". Thankfully, Blair, Brown and Cameron all have young children, and may come to their senses.

Some simple improvements that have provided benefit include the following.

Marks and Spencer reduced their heating costs by fitting automatic doors between the shop and the street and by fitting automatic taps so that hot water could not run to waste.

Streetlights used to be turned off at midnight, or thereabouts. Surely we do not need them all on all night!

We know a surgical team who are based at the Lister Hospital in Stevenage who are doing clinics in Hertford. This provides a better service for patients (particularly if they have difficulties with travel) and also reduces carbon emissions. A few doctors travel rather than a lot of patients.

We have a three-tier steaming saucepan (John Lewis) so that we can cook separate vegetables from a single heat source.

If you need a new heating system, don't forget solar (if you have a south facing roof).

If you need a new roof, consider photovoltaic tiles at the same time.

A big problem can feel threatening. Break it up into bite-sized chunks and solutions start to pop up.

For more information and ideas visit <http://www.carbonfootprint.com/>