

Energy and Climate

Energy is the Problem, Not Carbon!

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<http://www.fraw.org.uk/ebo/> ebo@fraw.org.uk

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The world is warming, and almost certainly the human species is responsible for this. However, the public debate on climate change tends to focus on the “problem” of greenhouse gas emissions. In reality, for developed nations like the UK most of those emissions are the direct result of energy use. If we continue to treat the symptoms – *the greenhouse gases* – as the problem then we will engage in what is termed (in medicine) a “palliative response”; we’ll cure some of the symptoms, but we won’t cure the root problem. Instead we must focus on the problem of “energy” rather than “carbon” as it is our absurd use of energy, and our reliance on the use of fossil fuels, that is the root cause of climate change.

Energy and Carbon

Nearly 90% of the energy traded globally is fossil fuels – this is the cause of climate change. Although the mechanisms that cause climate change are being influenced by our emissions of carbon dioxide, methane and nitrogen oxides, in terms of human activity it's our use of energy that's the problem. This ultimately is the source of most of the greenhouse gases we emit.

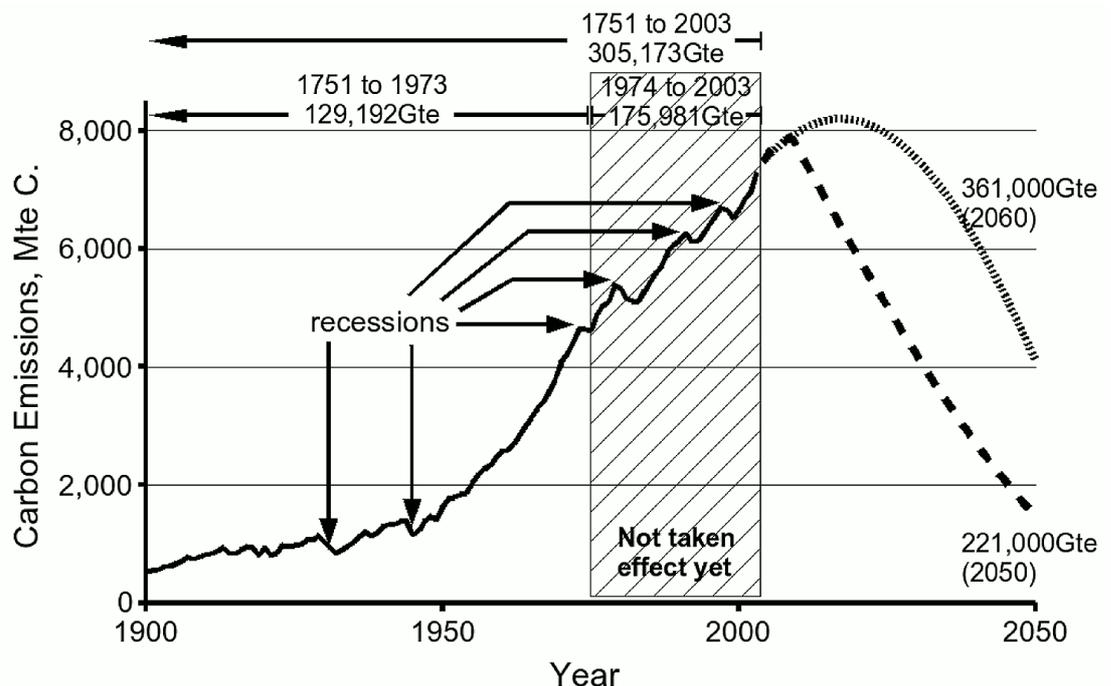
The problem at the moment is that the public debate on climate change is focussed on the “end of the pipe” – *carbon emissions*. There is a reluctance, even amongst environmentalists, to discuss the root causes of climate change; the growth in energy use, and the pursuit of economic growth which is driving our ever greater use of fossil fuel-based energy sources. We have to stop blaming carbon emissions and focus instead on the growth in global energy and resource consumption.

Correlating Energy and Carbon

If we look at the growth in carbon emissions over the industrial revolution (see fig. 1) the levels have grown exponentially since 1750. For much of that time emissions have been doubling every 23 years, but in the last 25 years the rate of growth has halved, in part because of the effects of the off-shoring of manufacturing plants and major economic recessions.

The majority of carbon is emitted at ground level (the exception is air transport, which is more damaging because it is emitted high in the atmosphere). For carbon emissions to have effect on the climate they must be mixed into the whole atmosphere right around the globe. For this reason it takes 30 to 50 years for today's carbon emissions to have an effect on the climate. If we look at past trends, this means that the majority of the carbon emitted since 1750 (176 out of 305 billion tonnes) has yet to take effect!

Fig. 1. Global carbon emissions, 1750-2003



This graph shows the estimated carbon emissions from 1750 to 2003 (based on the US Oak Ridge National Laboratory dataset), although only 1900 to 2003 is shown for the sake of clarity. Human carbon emissions have increased exponentially since 1750. Today the world emits in excess of 7 billion tonnes of carbon per year (note this is the mass of “carbon” – to convert to CO₂ multiply by 3.67).

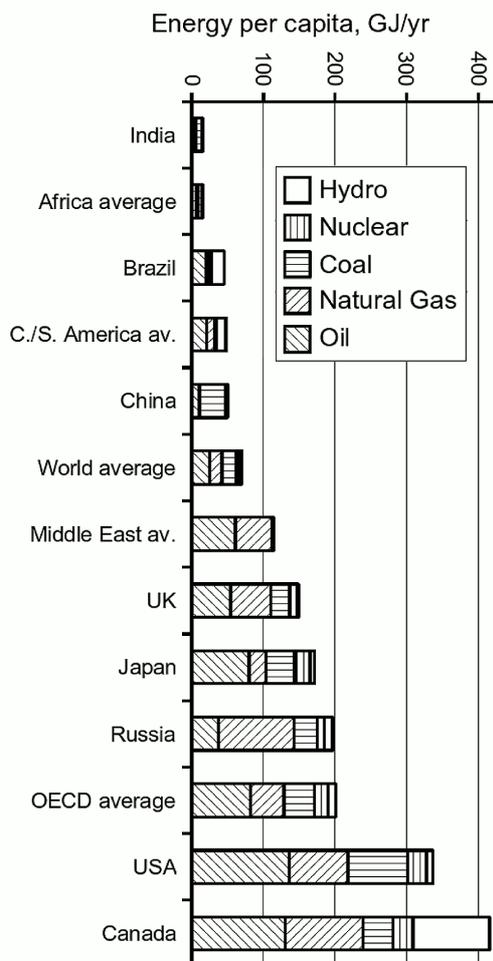
The “doubling time” (the period over which growth doubles emissions) has lengthened over recent years. There are two main reasons for this:

Firstly we've had a number of global economic recessions which have cut emissions;

Secondly, globalisation has closed old manufacturing plants in the West and developed new, more efficient plants in Asia.

Recently the trend in emissions has started to rise again. The developed states have exported just about all of the industries that they can and developing states are now beginning to increase their own energy consumption. Even so, if we look at the inequalities in global energy use per person (see fig. 2) then the developed states still use far more energy per capita than developing nations. What's more, although China or India may be growing their use of energy, a large proportion of that energy is re-exported to developed states in the form of commodities, goods or services – the citizens of those states do not receive the material wealth created by that energy.

Fig. 2. Energy and Equity



This graph shows the primary energy consumption per capita for a number of different states and regions. Source: BP Statistical Review of World Energy 2006

It's the rate of cut, not just depth, that matters

We've emitted more carbon in the last 30 years than the previous 220 (see fig. 1). If we really want to cut carbon emissions in order to avoid “dangerous climate change” then it's not just a matter of cutting carbon – the time scale is probably more critical.

In order to avoid the prospect of dangerous climate change we have to cut emissions (based on 1990 levels) by 70% to 80% by 2050. At the moment the world is emitting over 7 billion tonnes of carbon per year. For this reason it only takes a few years of inaction to significantly raise the total amount of carbon emitted between now and 2050.

If we follow the “mainstream” path laid out by Western states the decrease in carbon production will gradually turn the rising trend of emissions into a gradual decline (the top dotted line in fig. 1). But if we follow this path then between 2004 and 2060 another 361 billion tonnes of carbon would be emitted – that's more than all the carbon emissions between 1750 and 2003 (305 billion tonnes).

If we followed a more radical path, which would involve actually contracting the economy, then we would produce a far sharper rate of descent (the lower dashed line in fig. 1). This would involve the emission of another 221 billion tonnes of carbon – that's a little more than was emitted over the past four or five decades, but still 40% less than the “mainstream” trend.

Climate Change is Powered by Growth

There have been periods in the past 100 years when the world has reduced carbon emissions. The problem for the mainstream campaigners on climate is that all these periods were all global economic recessions – an unconscionable solution for the *status quo*.

Growth is a problem because the levels of energy efficiency we can achieve are less than the rate of economic growth. This growth wipes out the efficiency gains in a relatively short period and begins to drive consumption once again. For example, between 1990 and 2004 the UK increased its “carbon efficiency” (the amount of carbon produced for each £1 of UK output) by 31%, but over the same period the 39% increase in the economy as a whole meant that the total saving of carbon was just 4%. Likewise increases in car engine efficiency, household waste recycling or household energy efficiency are being nullified by the overall growth in the UK's consumption and waste.

Although the evidence of past emissions demonstrates that if we are to significantly cut emissions then we must cut growth. Many, even in the mainstream of the environment movement, use phrases such as “green growth” or “sustainable consumption”. There is no realistic basis (when viewing the problem holistically) to advocate such options as a solution to climate change. If you are a campaigner against climate change then recent evidence leaves only one conclusion: **If climate change is the greatest threat to the world then you must work for a prolonged period of global economic recession!**

This briefing was produced for the “UK Peak Energy Tour”, 2007 – see <http://www.fraw.org.uk/ebo/> for information.

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