How 'saving the planet' will improve our health

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Concern for the natural world is central to all Green thinking and, therefore, to Green economics. The political philosopher Andrew Dobson has argued (Dobson 1960) that the two most distinctive principles of green political philosophy are the inherent value it ascribes to the natural world and its respect for the limits that world sets to both possible and proper human activity.

Our understanding of these limits has changed considerably in the last forty years. There's now a general acceptance that human emissions of greenhouse gases will create catastrophic climate change unless they are sharply reduced. We have also come to understand that the Earth's capacity to absorb greenhouse gases is far from the only limit that we are approaching. The most authoritative recent examination of limits is the Planetary Boundaries work, discussed by Mark Lynas (2011), which identifies nine distinct boundaries.

But what has this to do with health? Are there such things as green health policies? Indeed there are and most of them are the same as the policies needed to ensure we live within the planetary boundaries.

Although respect for the boundaries requires many policies a full analysis would be very lengthy. I will therefore concentrate on one, greenhouse gas emissions (GHGE). I will show that the policies we need to reduce GHGE are generally beneficial to human health and wellbeing and should therefore be favoured by people of all political persuasions, even those few sceptical of climate change, provided only that they value human health.

My argument has three parts:

1. Reducing fuel consumption, deforestation and meat consumption will improve our health
2. The Green alternatives will improve our health
3. The Green social justice agenda will improve our health.

Reducing fuel consumption, deforestation and meat consumption will improve our health

<u>Electricity generation</u>

Though all fuel burning creates some pollution there's no doubt that coal is much worse than the other main fuels. It's also extremely popular and this is doubly unfortunate because it produces more greenhouse gases and more pollution per kilowatt-hour (kWh) than the other main fuels. A sharp reduction in coal consumption is probably the single most important policy for climate change mitigation.

New Scientist reported (McKenna, 2013) research by the International Energy Agency (IAE) (Husebye et al, 2002) which showed that coal is the most dangerous fuel used in electricity generation. Coal-related deaths are predominately due to the pollution and this arises from extraction and transport as well as combustion. It is interesting to note that when disasters

are included the most dangerous generation technology is hydropower; though most of the increase is due to events in China in 1975.

Fuel	**Deaths per 10B kWh – normal operation**	**Largest disaster**	**Deaths from largest disaster**	**Deaths per 10B kWh – all**
Coal	2.8-32.7			32.7
Hydroelectric	1.0-1.6	Dam failures in China, 1975	230,000	54.7
Natural gas	0.3-1.6			1.6
Nuclear	0.2-1.2	Chernobyl, 1986	9,000	1.2

Markandya et al (2009) have modelled the effect of reducing GHGE from electricity generation and distribution on fine particulate matter (PM2.5) concentrations in the air and thus on health. It found that a 50% GHGE reduction by 2030 would save 4,000 premature deaths in the EU. In China and India smaller GHGE savings would produce much larger benefits - 57,000 and 93,000 premature deaths in the respectively. The benefit is greatest in India because its air quality is currently the worst.

All generation systems have other health impacts as well:

- Coal: "the fly ash emitted by a power plant—a by-product from burning coal for electricity—carries into the surrounding environment 100 times more radiation than a nuclear power plant producing the same amount of energy" (Hvistendahl, 2007)
- Oil: Oil extraction has pernicious effects on local people in some places. Oil spills in the Niger delta have often damaged the health and livelihoods of local people.

Reducing our use of fossil fuels, especially coal, would have major benefits for climate and health.

Travel

The private car is a major source of GHGE. A reduction in car use is therefore a key climate change mitigation policy (together with improvements in fuel economy the introduction of electric and hybrid vehicles). It also provides some health benefits through reduced air pollution (Haines, 2012).

Greens generally favour lower speed limits and many campaigners have pushed to reduce urban speed limits from 30 to 20 mph. According to Grundy et al, 2006, the 20 mph speed limits imposed on London roads reduced deaths by 42%.

Deforestation

Deforestation is a key environmental concern and a major source of GHGE. It's also the reason that Indonesia is the third largest emitter of greenhouse gases in the world! There's a simple pattern. Agrobusinesses operating in Indonesia clear forests in order to plant palm trees (needed to meet international demand for palm oil). Fires started accidentally or deliberately consume the felled wood emitting vast amounts of carbon dioxide. In June 2013

the Guardian reported (Vidal, 2013) that over 800 fires were burning. They also set light to the peat, starting underground fires that are immensely difficult to extinguish and may burn for months.

These fires create vast smoke clouds that carry pollution across Indonesia itself and into adjacent countries – even as far as Hong Kong. The harm is hard to estimate but is clearly significant. For instance, during the winter of 1997/8 the smoke cloud covered an area larger than Europe! At least 20 million people were treated for smoke-related illnesses and many more were too poor to afford treatment. There were several collisions at sea and a plane crash in Sumatra killed 234 passengers. Deforestation also harms the health of local people by polluting watercourses and dispossessing indigenous peoples.

Stopping deforestation would obviously reduce GHGE and improve public health.

Meat consumption

Farming was responsible for about 10% of the UK's GHGE in 2011. Meat production requires more resources – land, water, fuel, pesticides – than producing vegetable food with the same nutritional value. Greens therefore favour eating less meat and many are vegetarians or even vegans.

Friel and co-workers (2009) modelled the health implications of a 30% reduction in meat consumption. Meat is a major source of dietary saturated fat and cholesterol and the study predicted a 15% reduction in ischaemic heart disease. There may also be reductions in cerebrovascular disease and colon cancer.

Overall

A study by the Netherlands Environmental Assessment Agency estimated the financial benefits of the lives that would be saved by climate change mitigation policies (Bollen et al 2009). They found that "Measures to reduce emissions of greenhouse gases to 50% of 2005 levels, by 2050, can reduce the number of premature deaths from the chronic exposure to air pollution by 20 to 40%." The scale and timing of benefits vary considerably between countries. In China, for example, policies that reduced GHGE by 80% relative to business as usual would deliver health benefits worth 4.5% of the Chinese GDP by 2050. The costs, however, would be 6.5% of GDP so health benefits alone would not justify the proposed policies. As a side-effect, however, 4.5% of GDP is very impressive!

The Green alternatives will improve our health

Travel

Travel in the UK, as in other developed countries, is dominated by the motor car. In consequence car use was responsible for 16% of the UK's carbon dioxide emissions (other than international shipping and aviation) in 2011. To reduce these emissions requires a significant reduction in car use and this implies increases in walking, cycling and the use of public transport.

Walking and cycling are, of course, much healthier than driving or being driven whether in cars or buses and the current epidemics of obesity and diabetes, to name but two, are due in part to our failure to take enough exercise. Though visits to the gym help most people who

join gyms soon give up. Walking and cycling are good alternatives to the expensive artificiality of the gym.

Switches to walking and cycling are associated with lower levels of ischemic heart disease, cerebrovascular disease, hypertensive heart disease, dementia, diabetes, breast and colon cancer and depression. Research by Woodcock et al (2009) considered changes in physical activity, air pollution and the risk of road traffic injury resulting from reductions in car use. They found savings of 7,500 disability-adjusted life-years per one million population. Their calculations did include increases in traffic accidents affecting pedestrians and cyclists.

The Ramblers have summarised the health benefits of walking (Ramblers, 2013). A study of 30,000 people in Copenhagen (Anderson, 2000) found that cycling to work for 3 hours per week reduced mortality by 40%.

Whilst reducing car use is a climate change priority increasing levels of exercise is a health priority. Public health authorities and climate change campaigners are natural allies.

Housing

Buildings are a critical part of the emissions picture since 40% of global emissions are buildings-related. Because buildings – even bad ones – last for many decades it's obviously important that we start building the low-energy buildings that we will need by 2030 and 2050 now. This is not happening at even 1% of the scale needed.

A key reason is that that many supposedly low-energy buildings are nothing of the sort (Tofield, 2012). Some use as much energy as buildings in which no special energy-reduction measures have been taken. However, a method of producing very-low energy buildings does exist. It's called passivhaus (http://www.passivhaus.org.uk/) and has been extensively used in Germany and Sweden. Passivhaus buildings (which may be schools or offices as well as houses) often use only 10% as much energy as conventional ones.

So Passivhaus is great for the climate. But what about the users?

It's good for them too, which should be no surprise since user comfort was the original inspiration for passivhaus. In his review Bruce Tofield produces evidence that passivhaus buildings are more comfortable and that the occupants of passivhaus offices both think they are and are more productive. And a report by the Westminster Sustainable Business Forum (Janowska, 2011) estimated that good low-energy office buildings would reduce sick leave by three days per year. They would also increase the productivity of office workers. Some similar data is given in Greening the Bottom Line (Romm and Browning, 1994).

The evidence here is indicative rather than compelling but it does point to health benefits that will presumably apply to homes as well as to offices.

A study by Wilkinson *et al.*, 2009 looked at the results of a possible programme to reduce GHGE due to the UK's housing stock by 26% by improved insulation, ventilation control, switching to electric heating, etc. The study found that consequential reductions in exposure to fine particles (PM2.5) would reduce premature deaths by 5,400 per year. This must be an underestimate since it ignored both cold-related deaths – currently a serious problem in the UK – and heat-related deaths – which are likely to become commoner as the climate warms.

The social justice agenda

Green parties have always sought social justice and very few environmentalists have favoured inequality. This commitment was originally founded on conventional Enlightenment moral principles: Since all are equally human they deserve equal respect from fellow citizens and institutions and equal opportunities to learn, work and play.

But Green politics, unlike most other sorts, seeks to base itself on science and it was therefore very satisfying to find, in 2010, that science supports the Green commitment to social justice. In their now famous book *The Spirit Level* sociologists Richard Wilkinson and Kate Pickett reviewed a vast body of research on the consequences of inequality. They found that unequal societies have higher levels of obesity, drug use, teenage pregnancy, infant mortality, murder and mental illness. And, the wellbeing of their children is lower.

They also established, at least to my satisfaction, that inequality CAUSES this array of social problems. It is not the only cause but it is one that we understand and can therefore address.

Finally, in a nicely circular fashion, more equal societies recycle more of their rubbish thus reducing (if only by a little) their GHGE.

Conclusion

This brief survey strongly suggests that most of the policies required to avoid climate change will have significant health benefits. In some cases the financial value of the benefits, in medical costs avoided and extra economic production, will be comparable with the costs. Both the financial benefits and the obvious human benefits – lives saved, suffering avoided – should be considered in assessing proposals for climate change mitigation.

There is, of course, a sense in which this discussion misses the point. Uncontrolled climate change will produce a global catastrophe in which millions will die from famine, flooding, disease and war. To avoid this is worth almost any cost.

But perhaps these deaths are just too many and remote, in both time and space, to engage today's policy-makers. Perhaps the likely deaths of thousands will weigh more heavily than the possible deaths of millions. We can only hope so.

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