



## OPINION: SOCIAL INEQUALITY AND ENVIRONMENTAL JUSTICE

### An unequal society is a more unjust society, according to DANNY DORLING

**W**ithin recent years awareness has been growing of the interconnectedness of social justice and the environment. This has resulted in the concept of environmental justice, the idea that all people have the right to a healthy environment and that poorer groups should not bear a disproportionate burden of those environmental policies that are enacted. Tradable carbon quotas impose just such a burden. Tradable carbon quotas force the poor, and especially women, to give up their rights to resources to the rich, as the rich can buy these quotas. Giving up such rights has mischievously been described as somehow being of benefit to poorer groups: they can supposedly 'cash-in' on their environmental allocation, but such cashing in is merely the legitimisation of existing inequalities and results in affluent people coming to believe that they have the right to pollute more because they have paid for that right. Paying to 'carbon offset' your air travel is a similar self-deceit.

### Inequality and Pollution

In Britain the poorest fifth of households live disproportionately in areas which produce the least pollution, including pollution from car exhausts, and yet they are also that group who will inhale the most of these pollutants from the exhaust fumes of the more affluent, those who drive past their homes on the way to the office. This relationship holds when poverty, pollution and emission statistics for all of the country's 10,000+ wards were examined and this made me realise that in seeking what might appear to be the most efficient short term economic solutions, we can both cause the greatest long term

environmental harm and exacerbate social injustice in the process (Mitchell & Dorling, 2003).

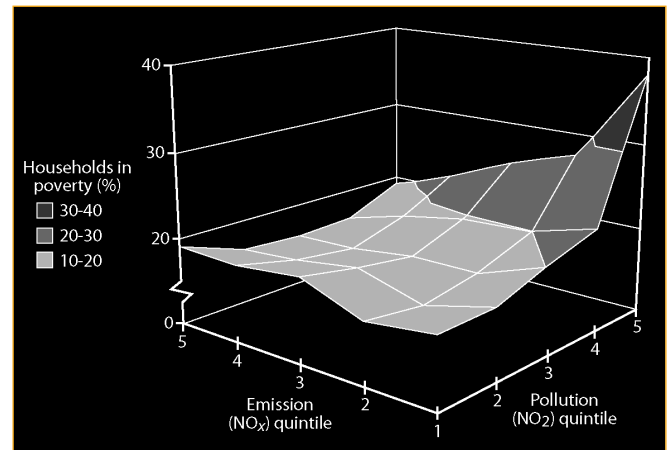
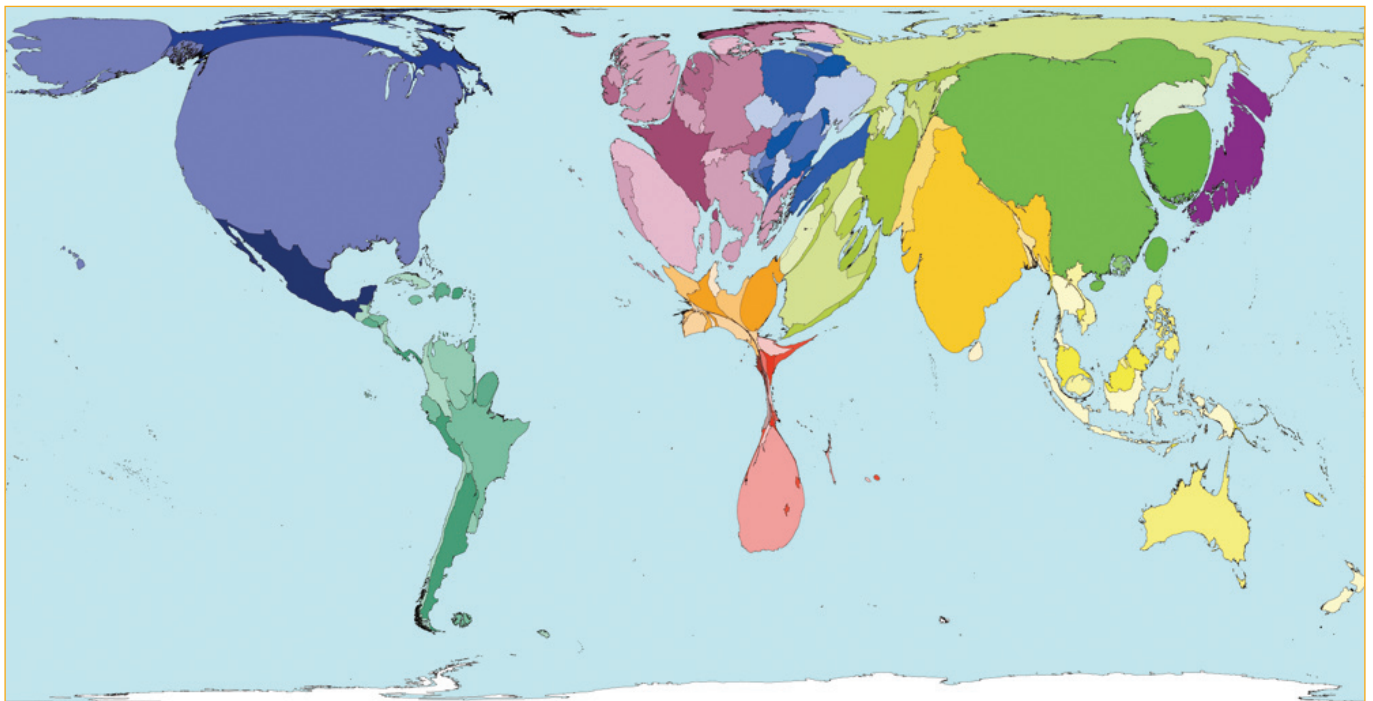


Figure 1: Poverty rate of wards by quintiles of emission and pollution of NO<sub>x</sub> (Source: Dorling, 2010)

Worldwide, inequality between those who most pollute and those who suffer pollution the most is far greater than within any one country. Imagine if the world were a city. In that planetary version the rich billion live upwind and on the hill. The world's most affluent one billion people either directly pollute or buy goods that disproportionately pollute the other six billion's air, water, land and foodstuffs. For the Worldmapper project, with a group of colleagues, I collected information on who polluted the most worldwide. The results shocked us (Dorling et al., 2007), and made me wonder what lay behind the disparities in levels of pollution per capita within affluent countries. These are countries which otherwise have very similar mean average income per person.

The 25 richest countries of the world those countries in which, for the first time in our generation, there are now more than enough resources for all to live a good life. In all those affluent countries there is no longer any material need for people to go without, as there was just a generation ago in, say, Britain, where most people could not afford to heat their homes to a level the majority would consider adequate today. We are now in an era where, within these affluent countries, and for the first time in human history, it is the poor who grow fatter than the rich. These 25 are the countries which now have enough to go round (they are similar to those chosen by Wilkinson and Pickett, 2010).



**Figure 2:** Worldwide distribution of pollution of Nitrogen Oxides (NOx) for all countries. Area is proportionate to pollution (Source: [www.worldmapper.org](http://www.worldmapper.org), data for 2002).

In all these affluent countries there are however inequalities, and in those where inequalities are the greatest it is now becoming evident that people, on average, pollute much more. The initial indications of this came in a series of recent papers on biodiversity which found that in affluent countries with high income inequalities there was a consequential faster loss of species and habitats occurring (see Mikkelsen et al., 2007; Holland et al., 2009; and Butchart et al., 2010). Earlier Liu et al. (2003) had shown how environmental damage per person tended to be greater in affluent countries with smaller household sizes. When combined with these later studies, this demonstrated the same to be true in more socially inequitable countries where free markets are more likely to be allowed to ride rough-shod over other concerns. It became clear that countries of great social inequalities made up of small nuclear family units have the potential to cause great environmental harm through more excessive consumption per person.

### Consumption and Pollution

In the last year I have been comparing levels of consumption and pollution between the world's richest nations and the results have shocked me. The afflu-

ent country with the lowest income inequalities between households is Japan. The richest tenth there receive 4.5 times more per year in income than the poorest tenth according to the latest statistics from the UN Development Programme (Dorling, 2010). In Japan, according to the Food and Agriculture Organisation, people on average each consume 44 kilograms of meat and fish per year (all remaining statistical sources are given in Dorling, 2011). In the UK the richest tenth of households receive 14 times the income of the poorest tenth each year and everyone consumes an average of 77 kilograms of meat and fish a year. In the United States the richest tenth receive 16 times the income of the poorest tenth and some 118 kilograms of meat is consumed by every man, woman and child each year (by rich and poor and all others combined).

Why, in the United States, where so many millions of people live in poverty and thirty million receive food stamps, are such huge quantities of meat consumed? It is not the affluent consuming all that meat. Everyone, on average, eats more in the USA than the UK. All social groups on average eat more meat in the UK than in Japan. Poorer people partly get into debt to eat so much meat (it is cheaper and

healthier not to). What happens in unequal affluent countries is that everyone increases their consumption to try to better mimic those just 'above' them, even in cases such as consuming excessive meat that is individually harmful, let alone more environmental destructive in aggregate (Frank, 2007).

There are exceptions to all the generalisations I am about to make about the behaviour of people in the rich world. For example, the Danes consume even more meat per head than the Americans, but the rarity of the exceptions and their cultural specificity with national stereotypes, makes the overall realisation even more telling that in general our animal carcass consumption and consequent pollution is three times higher where social inequalities are higher. The pollution is from animal slurry, methane, pesticides put on crops that the animals eat and fertilisers used as well as growth hormones given to animals before slaughter.

The same pattern is found when we look at domestic water consumption. In Norway, a relatively equitable country where the best-off tenth receive 'just' six times more than the poorest tenth a year, some 4.0 cubic metres of water is consumed by each resident each year. In France, where the income inequality ratio is 9 to 1, it is 5.1 cubic metres per year; while in Portugal, with a 15 to 1 ratio, it is 6.2 cubic metres per year. In the United States 6.8 cubic metres per person per year is consumed in contrast to Japan where consumption is 3.2 cubic metres per person per year. Profligacy in water use is not a function of climate or a cultural phenomenon; it is fundamentally a function of profligacy in general, which appears to be best predicted by higher income inequality. Everybody uses more water where people live more unequal lives. Egalitarian societies are better conserving societies.

Where high income inequalities are tolerated, selfish behaviour in other ways is more acceptable. The country which is the exception to the rule amongst the richest 25 by water use is the UK, where we each only consume 3.4 cubic metres despite living in a very unequal society. I hope that there is not a cultural stereotype that the British choose to wash

less than other nations (but those others are too polite to tell us!); perhaps we still have a lingering memory of war-time restrictions of not filling the bath up above the line you had to draw in it? Inequality explains a lot, but not everything.

It is not just in food and water consumption that we behave in more selfish ways in more selfish countries. When it comes to civilian flights there are 27 aircraft departures per 1000 people per year into the skies of the United States, 15 per thousand into United Kingdom airspace, and 5 per thousand from Japan. From much smaller islands however there are more flights regardless of economic inequality, and places like New Zealand are the great exceptions here that show how it is not always inequality which drives high levels of air fuel pollution, but also isolation.

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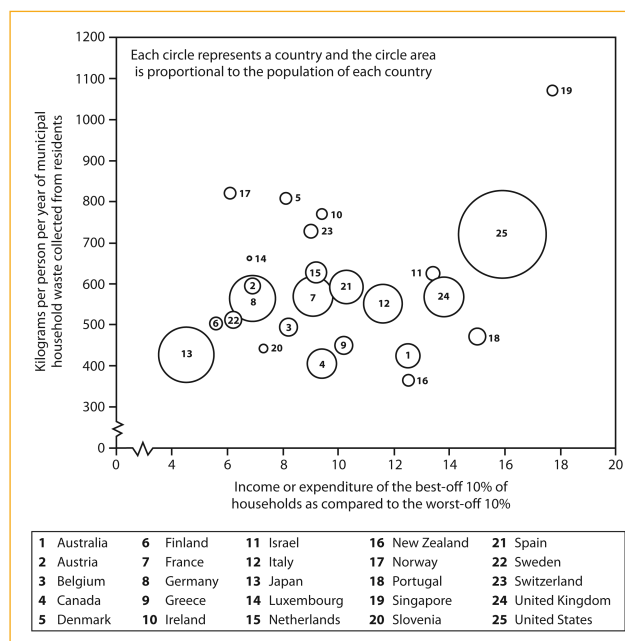
Again the exceptions help prove the general rule. Those countries that pollute the skies the most often have the least need for such frequent air travel. But it is in affluent countries where income and wealth inequalities are high, like the United States, where people appear to find it far harder to organise to build an efficient national rail system. Compare kilometres of train tracks per person in the USA to those in economically far more equitable affluent countries, like Japan. Then extrapolate further. When it comes to military flights and pollution in general from a wider range of sources than just civilian air travel the disparities between the behaviour deemed to be acceptable in different countries is even starker.

Other than in fuel use, our consumption can be well measured, in aggregate, through the weight of what we throw away. We tend to throw away or eat almost everything we buy, other than jewellery. We do this in a very short space of time (and jewellery tends not to weigh very much). If we did not throw away, or eat, most of what we purchase our homes would soon fill up. By weight the greatest average consumption amongst household in the rich world is in Singapore which also has the greatest income inequality ratio. There the richest tenth earn almost 18 times more than the poorest tenth a year.

In Singapore, household waste averages 1072 kg per person per year. In Switzerland, where the inequality ratio is 9 to 1, waste is 728 kg per person per year. In Sweden, where the inequality ratio is 6 to 1, waste averages 513 kg. Reduce inequality three fold and average consumption by weight halves. The graph below shows that there is great variation around the line just described. If however all the States of the United States could be shown separately on this graph, and the provinces of Japan, regions of Britain, and the länder, of Germany, dividing all these large countries into smaller circles, the pattern would become clearer again:

In an attempt to combine individual consumption of goods, food, meat, water, fuel and all the other aspects of our lives which influence our environmental impact, the World Wide Fund for Nature (and many other organisations) have produced estimates of the overall ecological footprints of people in each nation of the world. These too follow the same pattern when the affluent 25 countries are considered. Some 4.3 Planets would be required were everyone to behave like the citizens of the USA do (with their 16:1 income inequality ratio between extreme decile groups); some 3.5 planets would be needed if we all behaved like Australians (with a 13:1 ratio); 2.9 planets if we were all like the Irish (with their 9:1 inequality ratio); 2.4 planets if all like the Finns (with their 6:1 ratio), or 2.2 if like the Japan (with that 4.5:1 ratio). Still too many.

All these levels of consumption are too high and, of course, income inequalities are not the only determinant of polluting behaviour, but there is no affluent unequal country in which on aggregate people consume and pollute less, despite such countries containing so many poor citizens. Perhaps it is because countries like the USA, the UK, Portugal and Singapore contain so many poorer people that eve-



*“Where high income inequalities are tolerated, selfish behaviour in other ways is more acceptable”*

**Figure 3:** Residential Waste thrown away by weight verses income inequality in rich nations. Note these are the most affluent countries with 1 million people (Source: Dorling, 2011)



rybody in such places is a little less concerned with everyone else, including with their common environments?

“Environmental justice requires social justice and social justice cannot be achieved without greater equality of income and wealth”

### Conclusion

Within each country who gets to consume and pollute the most is again very unevenly distributed. Men tend to pollute more. Men drive more and fly more often, children pollute the least and are most affected by pollution in the long run, not least because their lungs are smaller and they breathe in at car exhaust pipe level. In unequal countries excessive consumption offers an escape from everyday realities and is lauded by governments to help ‘keep the economy going’. The worse pollution of all in such countries is the pollution of our minds from such banal thinking and the spreading of that mental pollution worldwide from the most aggressively free-market of such unequal countries. There is nothing truly free about such behaviour.

To consume less and pollute less we each need to begin to lead lives based on a more equitable distribution of resources. In an age of austerity the belts of those with most need to be tightened the most. That is when we come to see that we need not eat so much meat, need not waste so much water, need not travel so frequently and far, need not buy so many things we really do not need - all if we really do want to tread lightly upon the earth and have a smaller footprint. It is far easier to tread lightly when others are not thundering around you. Environmental justice requires social justice and social justice cannot be achieved without greater equality of income and wealth. All this has only recently become evident. Maintaining high economic inequality will speed up enhanced global warming.

• *Danny Dorling is Professor of Human Geography at the University of Sheffield. With a group of colleagues he helped create the website [www.worldmapper.org](http://www.worldmapper.org) which shows who has most and least in the world. He is a member of the World Health Organization’s Scientific Resource Group on Health Equity Analysis and Research.*

### References

- Butchart, S. H. M., Walpole, M., Collen, B., et al., 2010. “Global Biodiversity: Indicators of Recent Declines.” *Science*, 328(5982), 1164-1168.
- Dorling, D., Barford, A., & Wheeler, B., 2007. Health impacts of an environmental disaster: a polemic. *Environmental Research Letters*, 2(045007), 11pp. doi:10.1088/1748-9326/2/4/045007 ([www.worldmapper.org](http://www.worldmapper.org))
- Dorling, D., 2010. *Injustice, Why social inequalities persist*. Bristol; Policy Press.
- Dorling, D., 2011. See presentations given to the Royal Geographical Society in May 2010 and on ‘The economics of social inequality and the natural environment’ in November 2010 archived here: <http://sasi.group.shef.ac.uk/presentations/>
- Frank, R. H., 2007. *Falling Behind: How rising inequality harms the middle class*. Berkeley: University of California Press
- Holland, T. G., Peterson, G. D., & Gonzalez, A., 2009. A Cross-National Analysis of How Economic Inequality Predicts Biodiversity Loss. *Conservation Biology* 23(5), 1304-1313.
- Liu, J., Daily, G. C., Ehrlich, P. R., et al., 2003. Effects of household dynamics on resource consumption and biodiversity. *Nature* 421, 530-533.
- Mikkelsen, G. M., Gonzalez, A. & Peterson, G. D., 2007. Economic Inequality Predicts Biodiversity Loss. *PLoS ONE* 2(5), e444. doi:10.1371/journal.pone.0000444.
- Mitchell, G., & Dorling, D., 2003. An environmental justice analysis of British air quality. *Environment and Planning A*, 35, 909-929.
- Wilkinson, R., & Pickett, K., 2010. *The Spirit Level: Why equality is better for everyone*. London: Penguin.
- [www.worldmapper.org](http://www.worldmapper.org), 2010.