Climate Change and Population – Links and Trade-Offs

• "The strong correspondence among emission, population, and GDP rankings reflects the importance of population and economic growth as emissions drivers." (*Climate data: insights and observations*, Baumer & Pershing, Pew Center on Climate Change, December 2004.)

• "It is now plain that the emission of greenhouse gases, associated with industrialisation and economic growth *from a world population that has increased six-fold in 200 years* [italics added], is causing global warming at a rate that is unsustainable." (Prime Minister Tony Blair, January 2006, Foreword to *Avoiding Dangerous Climate Change,* a record of the 2005 conference held in Exeter.)

• "The global ecological footprint changes with population size, average consumption per person, and resource efficiency…[Ecological footprint] intensity…increases with greater population densities, higher per capita consumption, or lower resource efficiencies… Ecological deficit is the amount by which the ecological footprint of a population exceeds the biocapacity of the population's territory…[Ecological] debt reduction requires …increasing biocapacity…lowering world population…reducing per person consumption …improving [the] resource efficiency…" (*Living Planet Report*, 2004.)

• The UK's population increase of 10.5 million by 2074 means that every Briton will have to reduce their *per capita* emissions by 15 per cent for the country as a whole merely to "stand still" in emissions terms i.e. to keep its overall emissions level the same. The UK is one of the world's better performers in emissions reduction, but by 2005 it had managed to reduce its *total* CO_2 emissions by only 5.5 per cent from 1990 levels and in 2006 signalled that it would fail to meet its pledge to cut carbon emissions by 20% (from 1990 levels) by 2010.

• Population growth in the UK since 1990 accounts for the major part of the Government's projected failure to miss its target of cutting carbon dioxide levels by 20 per cent from 1990 levels by 2010. The Government said in March 2006 it was likely to reduce C02 levels by only 10.6 per cent below 1990 levels by 2010. (*Climate Change – The UK Programme 2006*, Defra, March 2006). Without population growth, Population Matters calculates the CO_2 reduction would have been 6.8 per cent more - around 17.5 per cent in total. The 6.8 per cent "extra" emissions are the result of an additional 3 million people in the UK since 1990, rising to 4.3 million by 2010. (Based on 2005 *per capita* emissions figures.)

• Every additional Briton, at current emission rates, will generate roughly 205 tonnes of carbon during their lifetime – equivalent to setting fire to a hectare of old-growth oak woodland (an area about three quarters the size of a Premiership football pitch or nearly 49 average-sized British gardens). The UK's projected population increase of 10.5 million by 2074 will thus have the same impact on the climate as burning an area of oak woodland bigger than Scotland and Wales combined (9.9m hectares), and nearly four times the size of the UK's current woodland cover (2.8 m hectares). (Sources: Forestry Commission, Defra, British Market Research Bureau. Based on annual *per capita* emissions of 2.55 tonnes of carbon and 200-250 tonnes of carbon per hectare of old-growth oak woodland. The average size of a British garden in 2002 was 2,215 sq ft or one-twentieth of an acre, according to the BMRB.)

• The world needs to reduce its annual CO_2 emissions to about nine billion tonnes (60 per cent below the 1990 level of 22 billion tonnes) to stabilise the atmosphere (Intergovernmental Panel on Climate Change). With world population projected to rise to nine billion by 2050, this is equivalent to one tonne of CO_2 for every person in the world - about one twentieth of current US levels and one tenth of current UK levels. If negotiations to reduce climate change followed the "contraction and convergence" model, which involves equalising emissions between countries in the interests of equity, the UK would have to cut its current emissions by about 90 per cent. This would mean reducing UK emissions levels to those currently obtaining in individual countries such as Peru, Albania, Tajikistan, Western Sahara - or more generally to slightly below the current average for the whole of Africa. For the world as a whole it would mean drastic and arguably wholly unrealistic cuts of 75 per cent, either in emissions or in population – the latter involving a reduction to 2.25 billion.

• If the current world population stopped using fossil fuels and lived a western European lifestyle based entirely on renewable energy, it would need, in total, 2.8 Earths - nearly two more planets - to support it, according to ecological footprinting calculations.(*Living Planet Report*, 2004, based on 2001 population figures.) On that basis, the world could support 36 per cent ($^1/_{2.8}$) of the population - 2.2 billion.

• The Earth could support only 450 million people if all its inhabitants emitted carbon dioxide at US rates. Current US emission rates would require 13.5 Earths to absorb them without harmful effects to the atmosphere. An "Americanised" planet would thus be able to support only 7 per cent ($^1/_{13.5}$) of the world population – 450 million. (*Living Planet Report*, 2004, based on 2001 population figures.)

• A UK citizen "emits" nearly three times more carbon dioxide than a Chinese person, nine times more than an Indian, 37 times more than a Bangladeshi, 87 times more than a Nepali and 262 times more than a citizen of Chad, Afghanistan or Cambodia. (International Energy Annual 2004, US Energy Information Administration.) The UK population as a whole thus has an impact on the atmosphere, and thus on the rate of global warming, far greater than its numerical population suggests.

• The UK's projected population increase of 10.5 million by 2074 would thus be equivalent in terms of damage to the planet's atmosphere to an increase in the population of Chad from 9.9 million to 2.75 *billion.* It would take a population of nearly 15.8 *billion* in Chad (or Afghanistan or Cambodia) – nearly two-and-a-half times the current total world population - to damage the planet's atmosphere as much as the present UK population (over 60 million). (The current world population is over 6.5 billion; Afghanistan's is 31 million and Cambodia's 14 million.) (Figures from ONS, US Census, Population Reference Bureau.)

Briefing by David Nicholson-Lord, July, 2006

David Nicholson-Lord was joint Policy Director of the Optimum Population Trust, which was the name Population Matters was known by until 2011.

Population Matters is the UKs leading charity concerned with population and sustainability.
135-137 Station Road, London E4 6AG UK +44 (0)208 1239116 www.populationmatters.org
Company registered in England 3019081 *Charity number 1114109*