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Climate change: how grave the threat?

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ABSTRACT – There is now no dispute about climate change: it is happening, and human activity is driving it. Each day, the threat this poses becomes clearer – threatening our civilisation and also the survival of our species. The immediacy of this threat is also now recognised: it is not something 'for the next millenium' but for our lifetimes and those of our children. Without urgent action, the future is grim. But we can all respond to make the difference. And the time to do so is now.

KEY WORDS: climate, CO_2, greenhouse gas, warming

Climate change is happening, and humans are driving it. Such is the consensus of meteorologists, physicists, natural historians, politicians, and even oil company chief executive officers. Atmospheric greenhouse gases trap radiant heat, and we have recently started releasing massive amounts of them: we burn 196,442 kg of coal, 103,881,279 litres of gas and 150,179 litres of oil a second, releasing nearly 40 billion tonnes of CO_2 annually into a thin atmosphere: half lies within three miles of the Earth's surface. Atmospheric CO_2 concentrations are thus rising fast (rising by 22% in only 50 years, reaching levels higher than at any time in the last 720,000 years, and 25% greater than in the last 500,000) at a time when the Earth's climate is very sensitive to such changes (Fig 1). The Earth's temperature is thus rising fast (0.1–0.16°C a decade already) and at an increasing rate.[1] This is having drastic effects: spring arctic sea ice is declining by 2.2% a year, and the NASA Goddard Space Center reports that winter ice volume has decreased by 6,300 cubic kilometres, or 40%, in the last 20 years or less. Sea levels are rising 3.1 mm/year, and inflation-adjusted costs of extreme weather events have risen sixfold in 50 years. And this is just the start. CO_2 production is still accelerating wildly.

The impacts of inaction are unthinkable: the Intergovernmental Panel on Climate Change (IPCC) predicted that, unchecked, temperatures will rise by 6.5°C this century and far more in some regions.[1] Climate change will bring 'increased deaths…and injury due to heatwaves, floods, storms, fires and droughts'. Cardiorespiratory disease will be driven by increases in ground-level ozone concentrations. Flooding and drought will bring disease, as will altered patterns of vector-borne disease. Water shortages will affect 250 million people in Africa by 2050, and >1 billion in Asia. Agriculture will fail regionally. Global economic collapse will occur, as will mass migration (a one metre sea level rise would flood 17.5% of Bangladesh).[2] Wars will result.[3] The Living Planet Index of 2008 shows that, in only 35 years, the world's wildlife population share declined by a third.[4] Several species are now lost at an hourly rate – and this before climate change has really bitten: 'mid-range risk' is of one in three species (and perhaps one in two) committed to extinction in the next 40 years.[5,6] We depend on these ecosystems for our very survival. No wonder, then, that a recent Lancet/University College London Commission reported that 'climate change is the biggest global health threat of the 21st century'.[3]

The bad news is that these data are already out of date. In the year in which the last IPCC report was published, even the worst-case scenarios for emissions were being exceeded: emissions rose by 3.1% in the first years of this century, rising from 1.1% a year during the 1990s. If 'worst case' was a 6.5°C temperature rise this century, we are heading to exceed that by some margin.

Action to create a low-carbon world is thus imperative if we are to secure our futures and those of our children. And action brings with it advantages. Local renewable-based energy generation increases the country's energy security. Energy saving reduces the need for new power plants – whether fossil fuel based or nuclear. Local agriculture makes us less dependent and more resilient. There are also great health advantages.[7] Energy costs for us, and for our schools and hospitals, will reduce. Air pollution will fall. More exercise means less obesity, diabetes, and coronary disease. Moving to a lifestyle associated with 30% reductions in CO_2 emissions may reduce European healthcare costs by as much as €76 billon annually.[8] So what must we do?

Firstly, we must all take personal action: only individuals can respond fast enough to buy time for politics and technologies. And the need for action is urgent: 20% of the CO_2 you release

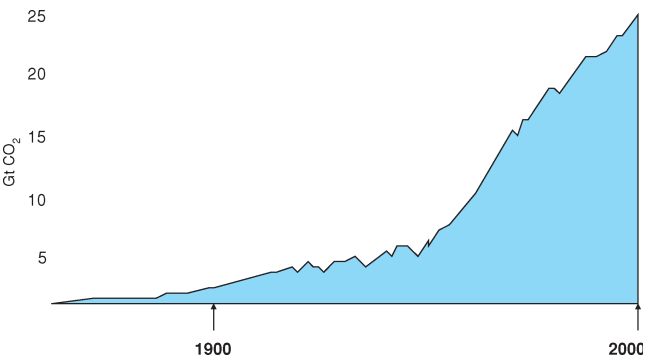

Fig 1. Cumulative total of CO_2 released from burning fossil fuels in the last 100 years. Data source: Climate Analysis Indicators Tool, CAIT, World Resources Institute, www.wri.org

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tomorrow will still be in the atmosphere in 33,000 years time. Go online and find a carbon calculator. See how much CO_2 you are responsible for, and how you can reduce this figure by 60% most readily. Roughly a third comes from travel, so try not taking a trip, or use a bicycle or public transport instead of driving. Domestically, use low energy light bulbs, turn off anything not in use (lights, computers, chargers, anything on standby), wear warm clothes and turn the heating down. Change your spending: buy local produce, wherever possible, from local shops. Think of the carbon cost of production: a computer uses 11 times its weight in oil to be manufactured, and one litre of mineral water uses a third of a litre of oil. Think about the carbon cost of packaging and shipping (wine from Australia? apples from Argentina?). Move your electricity account to Good Energy (www.good-energy.co.uk) or Ecotricity (www.ecotricity.co.uk). Switch to an ethical bank which does not invest in fossil fuels. And think before you spend the money you have saved: are you about to transfer the pollution to manufacture? Buy 'green'. And use your votes: we can all empower politicians to do the right thing. This is crucially important: in December 2009, Copenhagen sees 'COP15', the United Nations Climate Change Conference, at which international governments will negotiate deals on emission reductions. At the time of going to press, the US congress seems set to limit reductions to perhaps 2% by 2020 – less than one tenth of the minimum scientists suggest required. Professionally, we can all act as advocates. Start by signing up at www.climateandhealth.org. The Royal College of Physicians has helped fund an NHS license to show *The age of stupid* – a very effective way to engage colleagues – which is available from the same website. But whatever we do, we must do it now. Months matter to our climate and to the future of our planet.

References

1 Intergovernmental Panel on Climate Change. *Summary for policymakers.* Geneva: IPCC, 2007.
2 Stern J. *The economics of climate change: the Stern review.* Cambridge: Cambridge University Press, 2007.
3 Costello A, Abbas M, Allen A *et al.* Managing the health effects of climate change. *Lancet* 2009;373:1693–733. www.ucl.ac.uk/global-health/ucl-lancet-climate-change.pdf
4 Living Planet Index. Available at http://assets.panda.org/downloads/living_planet_report_2008.pdf
5 The Millennium Ecosystem assessment. Available at www.millenniumassessment.org/
6 Thomas CD, Cameron A, Green RE *et al.* Extinction risk from climate change. *Nature* 2004;427:145–8.
7 World Health Organization. *World Health Report: Reducing risks, promoting healthy life.* Geneva: WHO, 2002.
8 Holland M. *The co-benefits to health of a strong EU climate change policy.* Brussels: Climate Action Network Europe, Health and Environment Alliance, 2008.

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