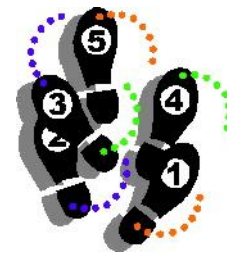


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Walking the Walk



Notes and Sources of Information

Unless stated, all figures are from 2007 - in most cases, this was the most recent year for which data was available. National figures were converted to per capita figures using the official 2007 population estimate of 60,769,000.

Electricity, energy and transport emissions have, unless otherwise stated, been calculated using Defra's standard conversion factors (<http://www.defra.gov.uk/environment/business/reporting/pdf/ghg-cf-guidelines-annexes2008.pdf>)

Introduction

The 50-85% global reduction target is from the IPCC's Fourth Assessment Report (http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_synthesis_report.htm). For examples of how climate change is happening faster than predicted, see: <http://www.reuters.com/article/topNews/idUSTRE51D29E20090214?rpc=64>, <http://www.timesonline.co.uk/tol/news/environment/article5355574.ece> and <http://www.telegraph.co.uk/earth/earthnews/3340633/Arctic-ice-melting-faster-than-predicted.html>.

The "global equity" figure is calculated using the total global greenhouse gas emissions from the year 2000 (33.6 billion tonnes – from http://pdf.wri.org/navigating_numbers.pdf). Reducing these by 85% would mean global emissions of 5 billion tonnes in 2050. Using the UN's estimate of a population of 9.1 billion people in 2050 (<http://esa.un.org/unpp>), this means that we would need a global emissions budget of 0.6 tonnes CO₂e per person in 2050. This represents a 95% reduction for residents of the UK.



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Home Emissions

The Defra/DECC Statistical Digest gives headline figures for the annual CO₂e from major areas of the economy – electricity generation, business, transport, the public sector, residential, agriculture, industrial processes and waste management.

(http://www.defra.gov.uk/evidence/statistics/environment/globalatmos/download/ghg_ns_2009_0326.pdf)

BERR has a more detailed breakdown of the energy used within the residential and commercial/public sectors (<http://www.berr.gov.uk/files/file43843.pdf>), but only for 2005. These figures have been converted into CO₂e using Defra's standard fuel conversion factors, and then the percentage split between heating, lighting, cooking and manufacturing has been calculated. These percentages have then been applied to the 2007 Defra/DECC figures (assuming that the split between these different purposes has not changed significantly since 2005), to give final figures for the carbon emissions from domestic heating, domestic water, domestic appliances, and domestic cooking.

Average per capita emissions for Indian and Chinese residents are 2005 figures from the World Resources Institute:

(http://en.wikipedia.org/wiki/List_of_countries_by_greenhouse_gas_emissions_per_capita)

Transport Emissions

The National Atmospheric Emission Inventory (<http://www.naei.org.uk/emissions/emissions.php>) provides the annual emissions from different forms of transport, while the Department for Transport's "Transport Trends" (<http://www.dft.gov.uk/pgr/statistics/datatablespublications/trends/current>) gives the distance travelled. The National Travel Survey (<http://www.dft.gov.uk/pgr/statistics/datatablespublications/personal/mainresults/nts2006>) breaks down people's annual travel by purpose (or it used to, until the survey changed in 2007, so the 2006 breakdown is used here). This data has been used to separate business travel from personal travel.

Food Emissions

The Food and Climate Research Network's recent paper, "Cooking Up A Storm" (<http://www.fcrn.org.uk/fcrnPubs/index.php?id=6>), calculates the emissions from all food produced in the UK, and also for all food consumed in the UK. Figures have been taken from the Excel spreadsheet labelled as Appendix 1. The consumption figure has been used here, but to avoid double-counting all the food-related energy use and transport from within the UK has been removed (this is already included under "business energy" and "business transport"). Overseas energy use and transport related to food are still included, however.

Emissions from Goods and Services

See "Home Emissions" – the same data from Defra and BERR has been used to calculate the commercial/Government sector's heating, lighting, electrical appliance use, industrial process energy use, industrial process direct emissions (e.g. from concrete production), and waste management emissions. Transport emissions were calculated using NAEI and DfT



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data, as for personal transport, above. The division of the total into one tonne for Government activities and four tonnes for the private sector is an estimate based on the categories within the Defra, BERR, NAEI and DfT tables.

Estimated emissions from imports are from a report by the Stockholm Environment Institute, for Friends of the Earth: http://www.sei.se/pubs/shadow_price_DEFRA.pdf

Aviation Emissions

Average aviation is calculated from Defra's figures but increased to include the extra emissions from burning fuel at high altitude.

(http://www.defra.gov.uk/evidence/statistics/environment/globalatmos/download/ghg_ns_2009_0326.pdf),

This "uplift" or "radiative forcing" multiplier has been estimated, variously, as:

2 to 4 (<http://www.ipcc.ch/pdf/special-reports/spm/av-en.pdf>) IPCC report *Aviation and the Atmosphere*. See page 9: "a factor of 2 to 4 larger than the forcing by aircraft carbon dioxide alone"

1.9 (Sausen R., Isaksen I., Grewe V., Hauglustaine D., Lee D. S., Myhre G., Köhler M. O., Pitari G., Schumann U., Stordal F. and Zerefos C. (2005) "Aviation radiative forcing in 2000: and update on IPCC (1999)", *Meteorologische Zeitschrift* 114, 555 – 561),

1.3 (Corrigendum to "It is premature to include non-CO2 effects of aviation in emission trading schemes": [Atmos. Environ. 40 (2006) 1117–1121]).

As the multiplier is still a hotly debated topic, the middle figure (1.9) has been used in these calculations.

Emissions from return flights to various destinations were calculated by taking the distance between capital cities, increasing it by 9% (the figure given by Defra for the extra distance travelled by planes for circling, avoiding certain airspace, etc.). Defra's standard conversion factors (<http://www.defra.gov.uk/environment/business/reporting/pdf/ghg-cf-guidelines-annexes2008.pdf>) were then applied, along with the 1.9 multiplier as explained above.

Tourism emissions include all the greenhouse gases emitted by British travellers abroad, minus all the emissions of foreign travellers in Britain. The calculation is by Oxford University's Dieter Holm (http://www.dieterhelm.co.uk/publications/Carbon_record_2007.pdf).

Aviation Reductions

Figures on who flies and how much are taken directly from the Civil Aviation Authority (<http://www.caa.co.uk/default.aspx?catid=81&pagetype=90&pageid=7640>)

as well as the WDM report "Dying On A Jet Plane"

(<http://www.wdm.org.uk/sites/default/files/dyingonajetplane19032007.pdf>)

Train travel to Europe is calculated using Defra's standard conversion factors (<http://www.defra.gov.uk/environment/business/reporting/pdf/ghg-cf-guidelines-annexes2008.pdf>)



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Lifestyle Reductions

Plastic bags – see the book “Carbon Detox” by George Marshall
TV and kettle savings are from the Energy Savings Trust

Electricity Reductions

Calculated from Defra, DECC and BERR data, as in “Home Emissions”, above.

Heating Reductions

Building heating emissions could be reduced by 60%, as per Oxford University’s “40% House” report (<http://www.eci.ox.ac.uk/research/energy/40house.php>)

The extra savings from using empty homes are based on the Empty Homes Agency’s “New Tricks With Old Bricks” report

(<http://www.emptyhomes.com/documents/publications/reports/New%20Tricks%20With%20Old%20Bricks%20-%20final%2012-03-081.pdf>), with further estimated savings from reducing the number of single-person households.

Transport Reductions

Mainly based on the same Defra and DfT data as in “Transport Emissions”, above. The three-person trip to the South of Spain was calculated using Defra’s standard conversion factors (<http://www.defra.gov.uk/environment/business/reporting/pdf/ghg-cf-guidelines-annexes2008.pdf>). The Ferrari is assumed to get 15 miles to the gallon (<http://www.mpgfacts.com/?did=19&year=1991>).

Food Reductions

The waste figures are from the Waste and Resources Action Programme (<http://news.bbc.co.uk/1/hi/uk/7389351.stm>).

FCRN, in the same report as cited earlier

(http://www.fcrn.org.uk/fcrnPubs/publications/PDFs/CuaS_web.pdf, Section 11), estimate that changes in diets and lower-carbon agriculture could together reduce the emissions of our food by up to 70%. A conservative figure of 60% has been used here.

