C175: Climate change reference sheet*

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Greenhouse gases: water vapor (H2O), carbon dioxide (CO2), methane (CH4), ozone (O3), nitrous oxide (N2O), halocarbons (PFCs, HFCs), sulfur hexafluoride (SF6)

Global warming potential CH4, 100 year time horizon: 25
Global warming potential N20, 100 year time horizon: 298

Pre-industrial stocks of CO2: 280 ppmv
Pre-industrial stock of all GHG in CO2eq: 290 ppmv
Pre-industrial stock of CH4: 715 ppbv

2005 stock of CO2: 379 ppmv, equivalently 803 GtC (387 ppmv or 820 GtC as of January 2008)
2005 stock of all GHG in CO2eq: 430 ppmv
2005 stock of CH4: 1774 ppb or 1.7 Gt

Annual emissions of CO2: 38 Gt (in 2005)
Annual emissions of all GHG in CO2eq: 49 Gt

GHG emissions by sector, globally: energy supply 26%, industry 19%, forestry and deforestation 17%, agriculture 14%, transport 13%. In comparison, the US produces proportionately twice as much from transport (26%) and about half the global average from agriculture (8%).

In the US, almost 50% of electricity is generated from coal, 20% from natural gas, 20% from nuclear, 7% from hydroelectric, and 2.5% from other renewable sources.
CO2 from energy generation using coal: 0.95 kg/kWh (US average)
CO2 from energy generation using natural gas: 0.60 kg/kWh
CO2 from gasoline: 2.4 kg/gallon
Vehicle use in US: 14000 miles/vehicle/year

Per capita emissions (tons CO2e/person/year) in the US: 23
Per capita emissions in EU15, Japan: 10
Per capita emissions in China: 4
Per capita emissions in India: 1

Rise since 1900 in global mean temperatures: $0.7\,^{\circ}\mathrm{C}$
Expected increase in temperature if GHG stocks stabilize at 550 ppmv CO2eq: $2 - 4.5\,^{\circ}\mathrm{C}$

$$1 \text{ kg C } = \frac{44}{12} \text{ kg } CO_2$$

$$1 \text{ ppmv } CO_2 \approx 7.7 \text{ Gt } CO_2 \approx 2.12 \text{ GtC}$$

*All data from IPCC 2007 unless otherwise noted. CO2 and VMT figures from DOE EIA, per capita data from WRI 2007.