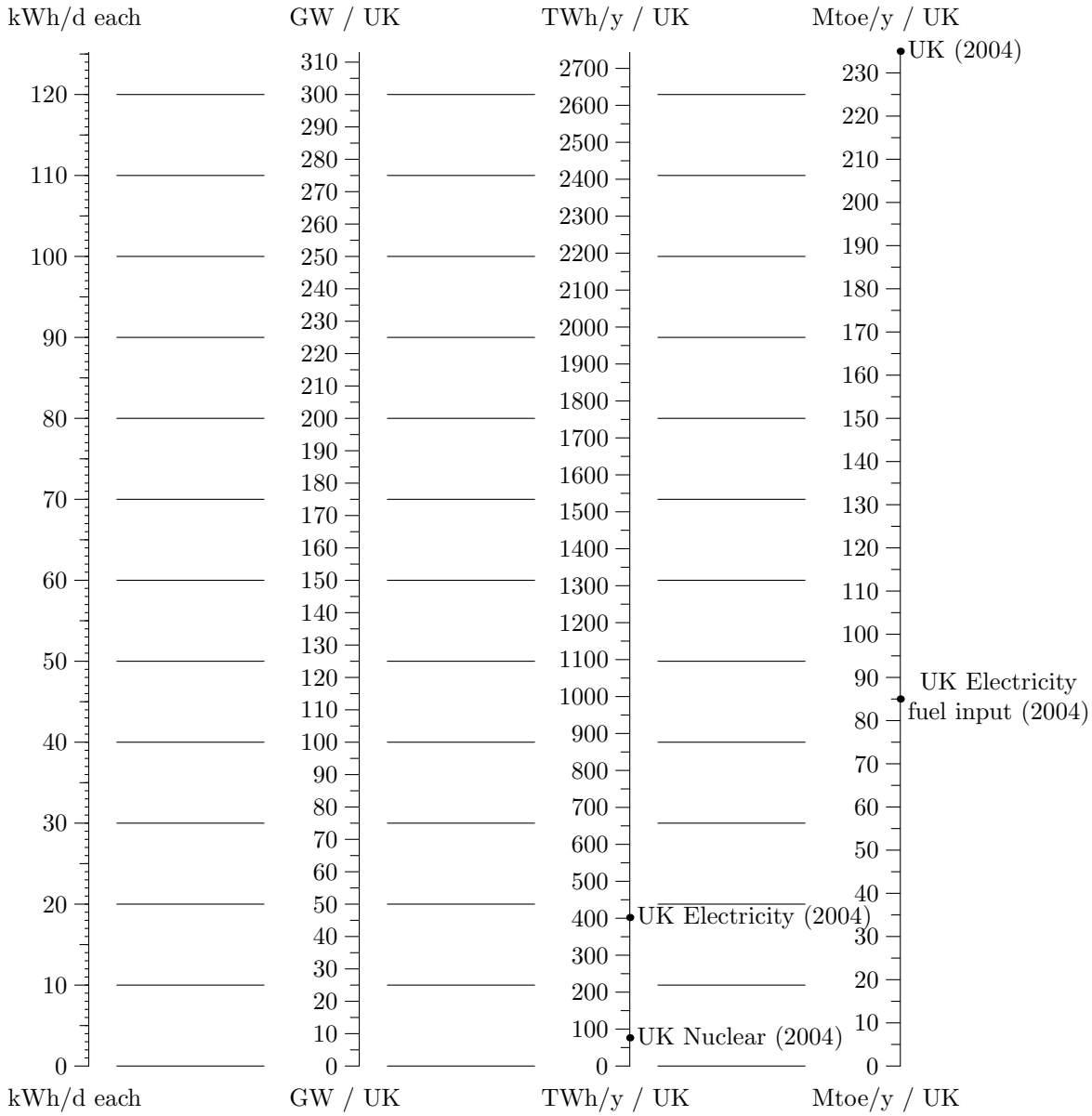
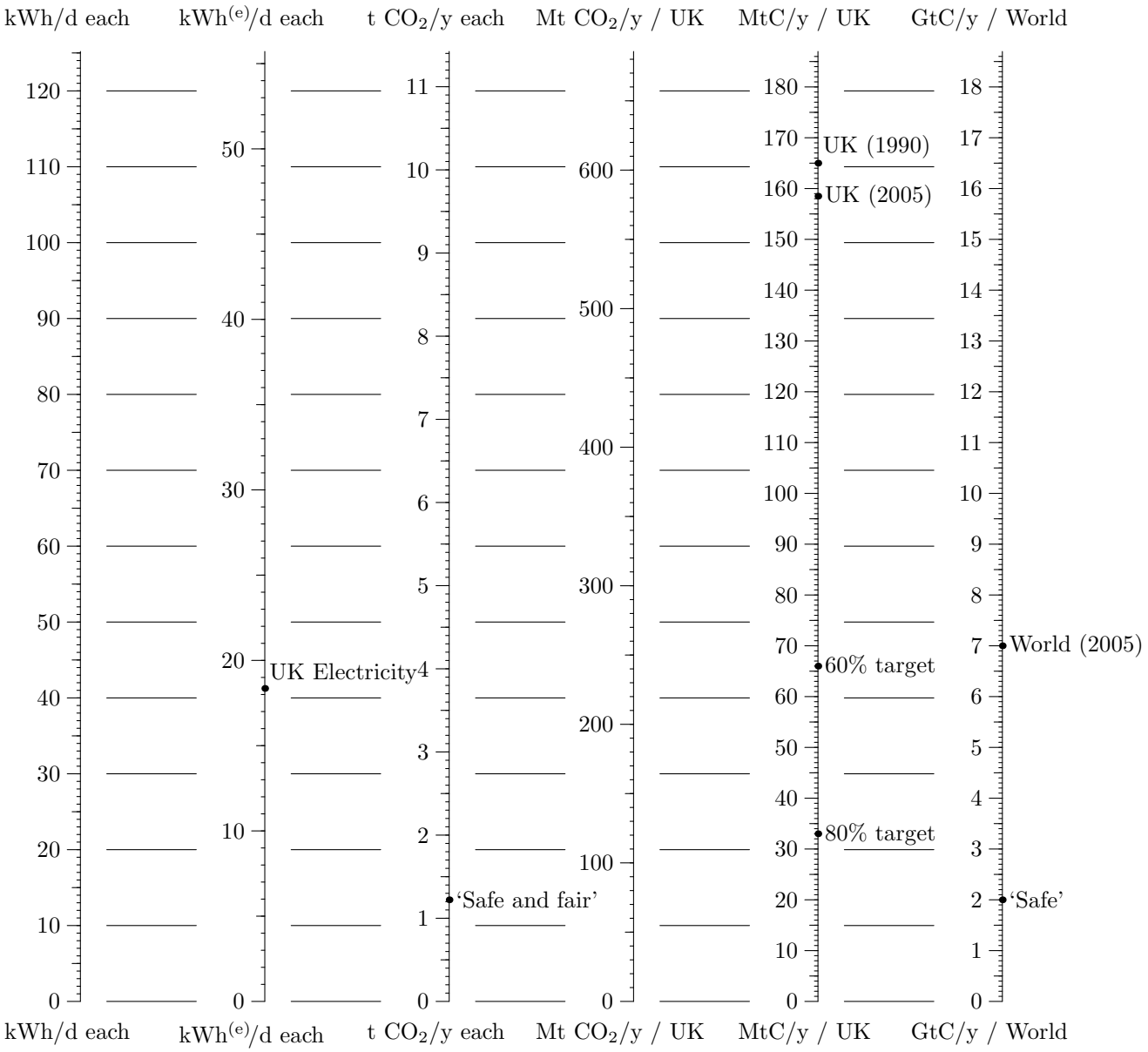
Power translation chart



1 kWh/d	the same as 1/24 kW	'UK'	= 60 million people
GW	often used for '**capacity**' (peak output)		
TWh/y	often used for average output	USA:	300 kWh/d each
1 Mtoe	'one million tonnes of oil equivalent'	Europe:	120 kWh/d each

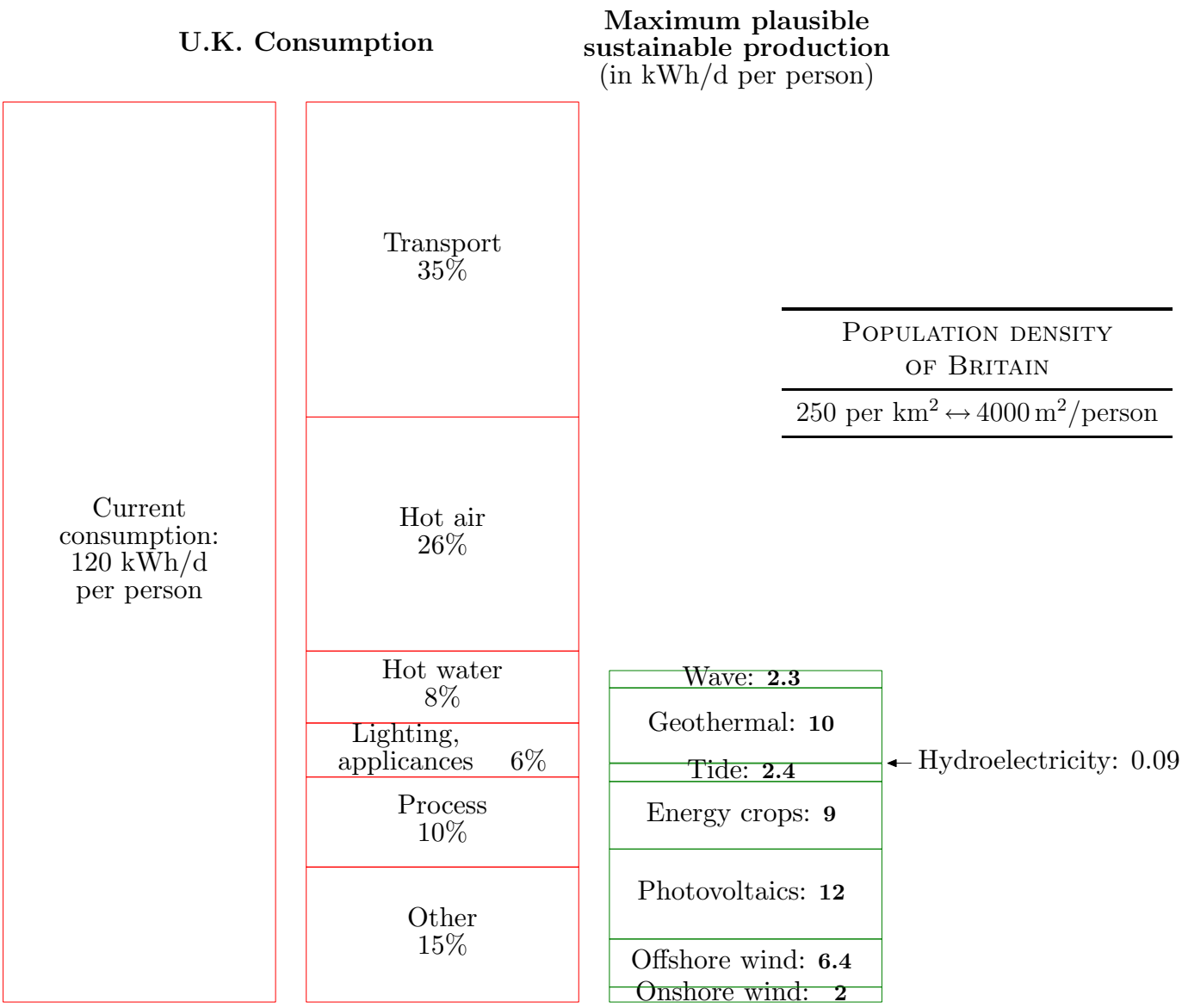
Carbon translation chart



kWh	*thermal* energy exchange rate: 1 kWh ↔ 250 g of CO_2 (oil, petrol)
$kWh^{(e)}$	*electrical* energy is more costly: 1 $kWh^{(e)}$ ↔ 445 g of CO_2 (gas) (Coal costs twice as much CO_2)
t CO_2	tonne of CO_2
Mt C	million tonnes of Carbon
Gt CO_2	billion tonnes of CO_2

'UK'	= 60 million people
'World'	= 6 billion people
UK:	160 Mt C per year (2005)
USA:	20 t CO_2/y each (1.5 GtC/y total)
World:	7 Gt C per year (2005)

To avoid 2 C global warming, need < 2 Gt C/y



Estimates of maximum plausible sustainable production, alongside an average consumption of 120 kWh per day per person.

The sustainable production numbers are taken from the Sustainable Development Commission's publication *The role of nuclear power in a low carbon economy. Paper 2: Reducing CO_2 emissions – nuclear and the alternatives* (March 2006). All figures for renewables except photovoltaics and energy crops are the "technical potential" from the Institute of Electrical Engineers's 2002 report *Renewable energy in the UK*. The "technical potential" is "an upper limit that is unlikely ever to be exceeded even with quite dramatic changes in the structure of our society and economy".

The figures for solar photovoltaics and energy crops are the 'theoretical potentials' (neglecting economic constraints) from the Tyndall Centre. The figure for photovoltaics assumes the use of all suitable buildings in the UK.

Consumption figures are from the DTI Digest of United Kingdom Energy Statistics.

We thank Cambridge Environmental Initiative for help with planning the meeting.